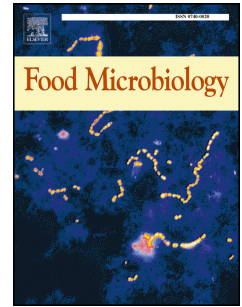


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Biofilm-associated persistence of food-borne pathogens

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Abstract

Microbial life abounds on surfaces in both natural and industrial environments, one of which is the food industry. A solid substrate, water and some nutrients are sufficient to allow the construction of a microbial fortress, a so-called biofilm. Survival strategies developed by these surface-associated ecosystems are beginning to be deciphered in the context of rudimentary laboratory biofilms. Gelatinous organic matrices consisting of complex mixtures of self-produced biopolymers ensure the cohesion of these biological structures and contribute to their resistance and persistence. Moreover, far from being just simple three-dimensional assemblies of identical cells, biofilms are composed of heterogeneous sub-populations with distinctive behaviours that contribute to their global ecological success. In the clinical field, biofilm-associated infections (BAI) are known to trigger chronic infections that require dedicated therapies. A similar belief emerging in the food industry, where biofilm tolerance to environmental stresses, including cleaning and disinfection/sanitation, can result in the persistence of bacterial pathogens and the recurrent cross-contamination of food products. The present review focuses on the principal mechanisms involved in the formation of biofilms of food-borne pathogens, where biofilm behaviour is driven by its three-dimensional

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