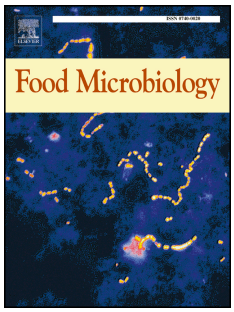

Biofilm-associated persistence of food-borne pathogens

A. Bridier, P. Sanchez-Vizuete, M. Guilbaud, J.-C. Piard, M. Naïtali, R. Briandet

PII: S0740-0020(14)00090-2

DOI: 10.1016/j.fm.2014.04.015

Reference: YFMIC 2156

To appear in: *Food Microbiology*

Received Date: 9 February 2014

Revised Date: 15 April 2014

Accepted Date: 27 April 2014

Please cite this article as: Bridier, A., Sanchez-Vizuete, P., Guilbaud, M., Piard, J.-C., Naïtali, M., Briandet, R., Biofilm-associated persistence of food-borne pathogens, *Food Microbiology* (2014), doi: 10.1016/j.fm.2014.04.015.

Biofilm-associated persistence of food-borne pathogens

A. Bridier[1], P. Sanchez-Vizuete[2,3], M. Guilbaud[2,3], J.-C. Piard[2,3], M. Naïtali[2,3] & R. Briandet[2,3*]

1. Irstea, UR HBAN, Antony, France; 2. Inra, UMR 1319 Micalis, Jouy-en-Josas, France; 3. AgroParisTech, UMR Micalis, Massy, France.

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