

Insights into the histamine-producing *Lentilactobacillus parabuchneri* biofilm characteristics

Sarquis, MA (Maria Agustina), Ladero, V (Victor), Fernandez, M (Maria), Alvarez, MA (Miguel)

Keywords

Biofilm, contamination, *Lentilactobacillus parabuchneri*, food safety, histamine

Abstract

Lentilactobacillus parabuchneri is a heterofermentative lactic acid bacteria usually present in fermented dairy products that was identified as the main responsible for the production and accumulation of elevated concentrations of histamine in cheese. The consumption of cheeses with high concentration of this biogenic amine has toxicological effects in consumers and is a safe concern.

Our group has found that some *L. parabuchneri* strains produce biofilms on the surface of dairy industry equipment. These biofilms are very resistant against cleaning and disinfection procedures, and act as reservoirs of histamine-producing bacteria. Therefore, the cheeses become contaminated during the elaboration processes and when consumed, they may have undesirable concentrations of histamine.

The present work was aimed to investigate the biofilm production of 25 dairy *L. parabuchneri* strains. The strains were categorized as strong, moderate and weak biofilms formers and two of them were selected from each category. The influence of temperature, surface materials, and pH on their ability to form biofilms was studied. In addition, the nature of extracellular matrix was also investigated.

This study highlights the importance of the industrial environment control to decrease undesired bacterial biofilms and improve cheese safety.