

PED2.19 The use of bacteriophages to reduce *L. monocytogenes* on food contact surfaces

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Although *Listeria monocytogenes* infections are rare, there is a high mortality rate in case of listeriosis, especially in sensitive age groups and immuno-compromised people. *L. monocytogenes* is known to attach to food production surfaces and contamination of food usually takes place at or after processing. Furthermore, this pathogen may grow and produce biofilms, especially at spots where cleaning and disinfection are difficult. Bacteriophages target bacteria quite specifically, usually on the strain level. Therefore, the use of bacteriophages to kill bacteria is a promising tool. Listex™ P100 is a commercial product to target *L. monocytogenes* specifically. It has been shown to decrease the numbers of this bacterium on food products and has the GRAS status. In this project, Listex was used to disinfect artificially contaminated stainless steel surfaces. Furthermore, biofilms containing the pathogen were treated with Listex as well.

Four strains of *L. monocytogenes* were applied on stainless steel surfaces in absence and presence of food debris (10% and 100% of milk, 10% of cooked ham suspension). The surfaces were subsequently treated with Listex and samples were taken in time to determine the surviving bacteria. A similar experiment was carried out with biofilms that were grown in stainless steel grooves. These biofilms were grown with a 3 strain-mixture of *L. monocytogenes* in the presence of milk, ham, salmon and endives including the natural flora of these food products.

Dependent on the multiplicity of infection, reductions of 1 to 4 log units per 100 cm² were achieved for the attached listerias. The presence of food debris hardly influenced the reduction rates, which is in contrast to chemical disinfectants that often lose their effect in the presence of organic matter. Reduction of the pathogen in the biofilms was observed at levels of 1-5 log units per groove, dependent on the depth of the groove and food type. Recovered bacteria were not found to be resistant to phages.

In conclusion, the use of bacteriophages to reduce *L. monocytogenes* on food contact surfaces, especially in the presence of food debris, seems promising when compared to chemical disinfectants. However, for application in large quantities, it may be a costly technique.