Publication abstract

Listeria inactivation on food contact surfaces with bacteriophage treatment

Based upon:
"Fate of Listeria on various food contact and noncontact surfaces when treated with bacteriophage"

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Journal of Food Safety, Volume 40, Issue 3, June 2020

The presence of *L. monocytogenes* and *L. Innocua* in food manufacturing environments poses risks to public health and food safety. This psychrotrophic pathogen is capable of surviving and growing under refrigerated conditions, making it a persistent concern in ready-to-eat (RTE) food production. Contaminated surfaces are potential sources of post-process contamination, which can compromise the safety of food products. A study conducted by the Virginia Tech University and Mississippi State University, United States, analyzed the effectiveness of bacteriophage (phage) product Phageguard L (PGL) (also known as Listex) in removing *Listeria* on various food contact surface coupons.

Trial setup

The study tested PGL's bacteriophage ability to reduce *Listeria* on stainless steel and polyurethane thermoplastic belting —materials frequently encountered in food manufacturing facilities. Two *Listeria* strains, *L. monocytogenes* and *L. innocua*, were selected. Surfaces were inoculated with *Listeria* and treated with bacteriophage at a low and a high concentration. Experiments were conducted at two temperatures, refrigerated and ambient, to simulate different manufacturing conditions. Treatment times of 1 and 3 hours were evaluated. Control coupons received water without bacteriophage.

Conclusion

Bacteriophage treatment effectively reduced *Listeria* counts on all tested surfaces under both refrigerated and ambient conditions. Depending on temperature, treatment time, and dosage, bacteriophage treatment reduced *Listeria* counts on stainless steel up to 3.33 log, and on polyurethane thermoplastic belting up to 2.76 log. The study demonstrated that bacteriophage applications are a promising intervention for *Listeria* control on contact surfaces commonly found in food production environments.

3.3 log Reduction

Listeria reduction on stainless steel

Phageguard L treatment reduced *Listeria* counts by up to 3.33 log on the stainless steel coupons.

2.7 log Reduction

Listeria reduction on polyurethane thermoplastic belting

Phageguard L treatment reduced *Listeria* counts by up to 2.76 log on the polyurethane thermoplastic belting.

Discover more about phage technology for *Listeria* control in our Phageguard Knowledge Center
Original publication: Journal of Food Safety, Volume 40, Issue 3, June 2020