Publication abstract

Bio-preservation strategies for reduction and growth inhibition of *L. monocytogenes* in cold smoked salmon, using bacteriophage treatment

Based upon:
"Reduction and Growth Inhibition of Listeria monocytogenes by Use of Anti-Listerial Nisin, P100 Phages and Buffered Dry Vinegar Fermentates in Standard and Sodium-Reduced Cold-Smoked Salmon"

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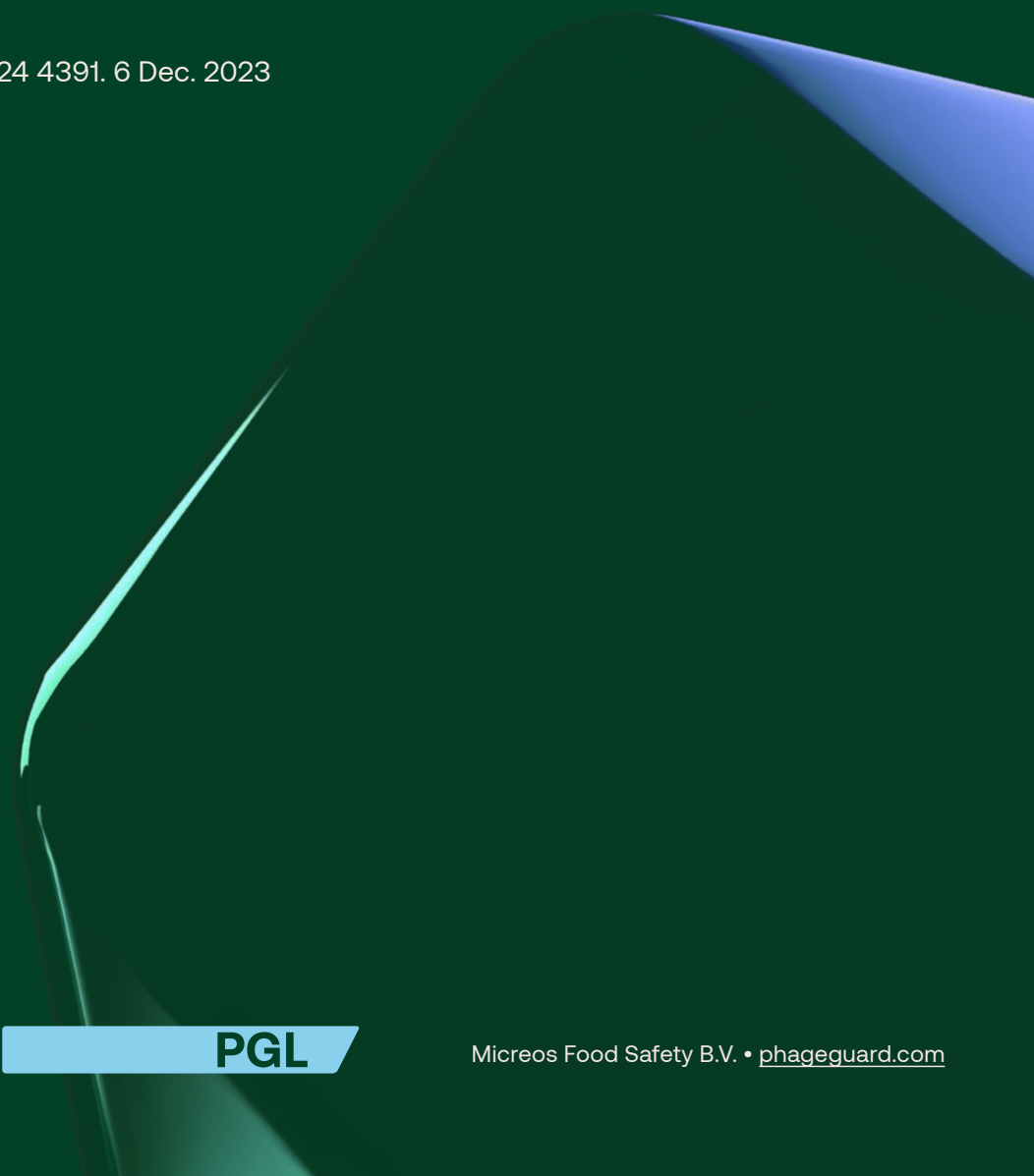

phageguard PGL

Cold-smoked salmon is a ready-to-eat product with food safety concerns due to its potential to harbor *Listeria monocytogenes*, a pathogen capable of growth in cold conditions, extending through the product's shelf life. A study conducted by Nofima AS in Norway, evaluated bio-preservation strategies, including the bacteriophage (phage) product Phageguard L (PGL) (also known as Listex), to control *L. monocytogenes* in both standard and sodium-reduced cold smoked salmon.

Trial setup

The study was conducted in three separate experiments using cold-smoked salmon. For the final evaluation, the cold smoked salmon was produced in an industrial commercial smokehouse, to simulate realistic processing conditions. All salmon samples were artificially contaminated with *L. monocytogenes* using a multi-strain cocktail. Following contamination, phage treatment was applied individually, in combination with Anti-Listerial Nisin, and alongside buffered dry vinegar fermentates. Samples were stored at relevant industry temperatures for up to 34 days. Storage conditions and handling procedures reflected commercial practices to assess the efficacy of bio-preservation strategies in both standard and sodium-reduced cold-smoked salmon.

Conclusion

The application of Phageguard L resulted in initial reductions of *L. monocytogenes* (up to 0.7 log), with additive effects observed when combined with Anti-Listerial Nisin, achieving up to 1.7 log reductions after 34 days. Enhanced control was noted with the inclusion of buffered dry vinegar fermentates, maintaining the lowest levels of *L. monocytogenes* during storage. This study demonstrates that effective reductions and growth inhibitionof *L. monocytogenes* can be achieved in both standard and sodium-reduced cold-smoked salmon through these bio-preservation strategies, supporting their application in the food industry.

0.7 log Reduction

Individual PGL treatment in cold-smoked salmon

Study results showed that individual treatment with Phageguard L achieved reductions of *L. monocytogenes* by up to 0.7 log in the cold-smoked salmon products.

1.7 log Reduction

Combined treatment in cold-smoked salmon

Study results showed that the combined treatment of Nisin and Phageguard L achieved reductions of *L. monocytogenes* by up to 1.7 log in the cold-smoked salmon products.

Discover more about our phage technology for *Listeria* control in the Phageguard Knowledge Center
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