Publication abstract

Listeria inactivation and quality impact on various leafy greens with bacteriophage application

Based upon:
"Inactivation efficacy of four commercial post-process treatments against Listeria monocytogenes and impact on the commercial quality of leafy greens"

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Listeria monocytogenes **is a foodborne pathogen prevalent in environments like food processing plants and agricultural fields. Fresh produce is particularly vulnerable to contamination, leading to food safety risks. As *Listeria* is highly resilient and capable of surviving in various conditions, complete eradication from food is often impractical. A study on fresh-cut curly endives, conducted by the Research Institute CEBAS-CSIC in Spain and ISI FOOD PROTECTION in Denmark, evaluated the effectiveness of the bacteriophage (phage) product Phageguard L (PGL) (also known as Listex) in inactivating *L. monocytogenes* in ready-to-eat leafy greens.**

Trial setup

The study tested the efficacy of Phageguard L on four types of leafy greens: romaine, iceberg lettuce, baby spinach, and cabbage. The leafy greens were inoculated with a cocktail of *L. monocytogenes* strains and treated with the bacteriophage product using a spray application system. The treated produce was packaged in air-permeable bags and stored for 15 days. Microbiological samples were taken from day 0 to up to 15 days to assess *Listeria* reductions. The trial was designed to mimic industrial conditions and evaluate how phage product Phageguard L performs in realistic commercial settings.

Conclusion

The study shows that the application of Phageguard L did not negatively impact parameters such as texture, flavor, browning/yellowing, or visual appearance. The bacteriophage treatment consistently provided *L. monocytogenes* reductions of 2.0 log across the various types of leafy greens and remained stable during storage, effectively inhibiting regrowth. These findings show that Phageguard L can be a effective tool for controlling *L. monocytogenes* contamination in fresh produce, contributing to improved food safety in the fresh-cut industry.

2.0 log Reduction

Average Listeria reduction on various leafy greens types

The study results demonstrated *Listeria* reductions of 2.0 log across various types of leafy greens during storage. These findings highlight the efficacy of Phageguard L in controlling *Listeria* on fresh produce, like romaine lettuce.

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

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