

Publication abstract

Reducing *Salmonella* in ground chicken using bacteriophage treatment

Based upon:

“Reduction of Salmonella in ground chicken using a bacteriophage”

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Among the foods associated with *Salmonella* contamination, raw and undercooked poultry represents a significant risk. Several *Salmonella* serovars, such as *S. Typhimurium*, *S. Newport*, *S. Heidelberg*, and *S. Enteritidis*, have been identified as the most common types found in poultry, particularly ground chicken (USDA-FSIS, 2015a; Fratamico, 2003). A study conducted by the University of Maryland Eastern Shore evaluated the effectiveness of bacteriophage (phage) product [Phageguard S \(PGS\)](#), formerly known as *Salmonex*, as current antimicrobial methods, such as organic acids and chlorine, face limitations.

Trial setup

In this study, two cocktails of *Salmonella* serovars were tested: one containing strains isolated from ground chicken (*S. Newport*, *S. Typhimurium*, and *S. Thompson*) and another containing lab strains (*S. Heidelberg*, *S. Enteritidis*, and *S. Typhimurium*). The bacteriophage was diluted and applied to the inoculated chicken samples. The samples were stored at 4 °C (39.2 °F) and incubated for either 30 minutes or 8 hours prior to grinding. Control samples received no bacteriophage, only water.

Conclusion

The results showed that bacteriophage treatment was effective in reducing the *Salmonella* populations. While the overall reduction in *Salmonella* populations, though significant, did not reach a full 1-log reduction within the 8-hour incubation period. After 30 minutes of interaction, bacteriophage treatment reduced *Salmonella* populations in ground chicken by up to 0.71 log. At the 8-hour mark, greater reductions were observed, with up to 0.90 log. These findings suggest that bacteriophage treatment offers a promising alternative antimicrobial to existing practices in the poultry industry

0.71 log
Reduction

Salmonella reduction after 30 minutes post-application

After 30 minutes of storage post-application, the bacteriophage treatment reduced *Salmonella* populations on the chicken samples by up to 0.71 log.

0.9 log
Reduction

Salmonella reduction after 8 hours post-application

After 8 hours of storage post-application, the bacteriophage treatment reduced *Salmonella* populations on the chicken samples by up to 0.90 log.

