# Publication abstract

## Effects of bacteriophages and PAA against *Salmonella* in different beef grinding stages

**Based upon:**
*"Effects of bacteriophages and peroxyacetic acid applications on beef contaminated with Salmonella during different grinding stages"*

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**The contamination of beef with *Salmonella* during processing remains a critical concern for the U.S. meat industry. Despite significant strides through the USDA's Salmonella Action Plan, *Salmonella* continues to pose a risk, especially in ground beef, where lymph nodes may contribute to contamination. A study conducted by the University of Nevada in the United States evaluated the effectiveness of bacteriophage (phage) product Phageguard S (PGS), and peroxyacetic acid (PAA) on reducing *Salmonella* contamination in trimmings, coarse, and fine ground beef.**

## Trial setup

The trial involved inoculating beef trim, coarse ground, and fine ground samples with contaminated with a cocktail of different *Salmonella* strains. Each sample was treated with either peroxyacetic acid (PAA), or bacteriophages at three different concentrations (low, medium, and high). The study used a completely randomized design with three repetitions, simulating contamination from grinding lymph nodes harboring *Salmonella*.

## Conclusion

The study demonstrated that the application of bacteriophages significantly reduced *Salmonella* contamination in fine ground beef. Phage treatments achieved reductions of 1.12 to 1.67 log, depending on the concentration and grinding stage, with the highest phage treatment showing the greatest reduction. PAA, on the other hand, did not decrease *Salmonella* contamination in most grinding stages. The findings suggest that bacteriophage application, particularly at higher concentrations, is an effective method for mitigating *Salmonella* in ground beef, offering potential for use in food safety protocols, especially in high-risk products.

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**1.67 log Reduction**

## *Salmonella* reduction in ground beef

Phage treatment applied at a higher dose significantly reduced *Salmonella* in fine ground beef by 1.67 log.

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

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