

LYTIC BACTERIOPHAGES AGAINST MULTI-RESISTANT *Salmonella enterica* FROM AVIAN ORIGINS IN TUNGURAHUA PROVINCE

Paulina Topa Pila^{1*}, Katheryne Morales Cunalata¹, William Calero Cáceres²

¹ These authors contributed equally to this work and share co-first authorship

² UTA-RAM-One Health, Department of Food and Biotechnology Science and Engineering, Universidad Técnica de Ambato, Ambato, Ecuador

*Corresponding author: paulinalisethtopa@gmail.com

Given the rise in antimicrobial resistance due to overuse of antibiotics in poultry, bacteriophages are surfacing as a viable alternative. This study focuses on isolating lytic bacteriophages specific to multi-resistant *S. enterica* from avian origins in Tungurahua province, particularly from contaminated water sources, and evaluating their lytic capacity and stability under various conditions. The host bacteria were selected based on sensitivity determined by the Kirby-Bauer test and molecular genotyping via (GTG)₅-PCR. Bacteriophages were isolated and purified using the double-layer agar method and Modified Scholten Medium (MS), deploying two strains of *S. enterica* serovar Infantis. Post-purification, the lytic profiles of bacteriophages were evaluated through the spot test, and stability was assessed under refrigeration and freezing temperatures at different pH levels. Twenty-seven bacteriophages were isolated, revealing seven with a broad host range, lysing over 94% of the strains analyzed. Stability studies indicate that phage titer reduction and bacterial lysis were significantly impacted by temperature and pH, underscoring the necessity to understand phage stability for effective application. The findings suggest a strong potential for utilizing lytic bacteriophages as innovative biocontrol agents against antibiotic-resistant pathogens, especially in raw poultry products.

Key words: Multi-resistant *Salmonella enterica*, poultry, bacteriophage bioprospecting, bacteriophage stability.