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## Harnessing phages to combat bacterial pathogens in animal production: From research to application

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The accelerating emergence of antimicrobial resistance in animal production poses a growing threat to both veterinary medicine and public health worldwide, demanding innovative and sustainable alternatives to antibiotics.

Bacteriophages are viruses that specifically infect and lyse bacteria and are increasingly recognized as a natural and highly promising solution against pathogenic bacteria. Their unique biological features make them particularly well-suited for veterinary applications: they precisely target pathogenic bacteria, self-amplify at the site of infection, and spare the beneficial microbiota. Phages can be applied in multiple complementary ways: therapeutically to treat infections where antibiotics fail; preventively through biocontrol strategies that reduce bacterial load in herds and flocks; for biosanitation of farm environments and processing facilities; and in biopreservation to enhance the microbial safety and shelf life of animal-derived products.

Research and experimental studies have demonstrated phage efficacy against key bacterial pathogens in veterinary microbiology, including *Escherichia coli*, *Salmonella enterica*, *Campylobacter* spp., *Clostridium perfringens*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus*, in both livestock and companion animals.

Phage-based approaches therefore represent a versatile, environmentally friendly alternative to antibiotics, with the potential to improve animal health, enhance food safety, and mitigate the public health risks associated with antimicrobial resistance.

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### Professional Status of the submitter, who is also the speaker

PhD Student

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