

# ONE HEALTH & GLOBAL HEALTH SECURITY

(Antimicrobial resistance)

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**Exploration for bacteriophages against drug resistant *Staphylococcus aureus* and *Pseudomonas aeruginosa* isolates from infected post-operative wounds**

The study was conducted to establish stock of bacteriophages locally isolated from environmental sources capable of infecting *Staphylococcus aureus* and *Pseudomonas aeruginosa* obtained from post-operative wounds. Bacteriophages were isolated from environmental samples by filtering through membrane pores, enriching with overnight cultures of specific bacterial host, and amplified thrice. Raw municipal waste sewage, water streams in slums, and soil around animal slaughter houses and animal fecal matter were the sources of environmental samples for isolation of bacteriophages. Bacteriophages against *Pseudomonas aeruginosa* were isolated from sewage treatment plant, while those against *Escherichia coli*, *Salmonella* and *Staphylococcus aureus* were isolated from wastes collected from the abattoirs. The bacteriophages isolated from these environmental sources effectively lysed the specific bacterial strain that was used for enrichment. All bacterial isolates of *Pseudomonas aeruginosa* and *Staphylococcus aureus* were resistant to ciprofloxacin, neomycin, tetracycline, methicillin and chloramphenicol. Drug resistant bacterial isolates of *Pseudomonas aeruginosa* from post-operative wounds were all lysed by the bacteriophages. The titer of the bacteriophage against *Pseudomonas aeruginosa* was  $2.4 \times 10^8$  plaque forming units per milliliter, and the multiplicity of infection was 0.16. Sensitivity to phages by the drug resistant bacteria isolated from the post-operative wounds indicates the possibility of developing phage preparation for use in controlling associated infections. The phage isolates need to be characterized further for their suitability as alternative antimicrobial agents as well as to sensitize Ugandan scientists and other stakeholders to embrace the technology.