

## **[ID: 383] Synergetic effect between phage and antibiotics as an alternative strategy to control *Pseudomonas aeruginosa* biofilm associated infections**

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Bacterial biofilms are sessile microbial aggregates with unique community properties, showing a high degree of tolerance/resistance to disinfection by chemicals, antibiotics, and to the human immune system. The opportunistic pathogen *Pseudomonas aeruginosa* is one of the most frequent causes of biofilm-associated infections, causing infections extremely difficult to treat. Currently, bacteriophages (phages) are becoming a potential solution for the treatment of such infections. In this study, we aimed at assessing the combined effect of a *P. aeruginosa* phage vB\_PaM\_EPA1 (myoviridae) and antibiotics to control *P. aeruginosa* biofilms. Phage and antibiotics were simultaneously or sequentially (antibiotics were added after of 6 hours of phage action) added to biofilms. After 24-hour treatment, bacterial survival was measured. Results showed that some phage-drug combinations greatly reduced bacterial densities, ranging from 2.6 to 3.7 orders of magnitude. Furthermore, we observed a biofilm eradication with sequential treatment by phage and gentamicin. Overall, our results show that combination of phages and antibiotics are very effective against *P. aeruginosa* biofilms when applied sequentially, and this constitutes a good strategy to control biofilm-associated infections.

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