



Viruses; Friends or Foes (Bacteriophage; Future of the Old Dogma)

Nada Adel Fahmy,

Helmy Institute of Biomedical Sciences, Egypt

Abstract:

Antibiotics are probably the most effective therapeutic drugs in the history of medicine. They significantly reduce the annual mortality and morbidity rates associated to common bacterial diseases. Unfortunately, as the hypothesis of the tragedy of commons, the over usage of antibiotics arises new multi-drug resistant (MDR) traits. As announced by World Health Organization (WHO, 2014): "Resistance to the common bacteria has reached alarming levels in many parts of the world.". While Centers for Diseases Control and Prevention (CDC) reported that more than 2.8 million MDR cases occur annually in U.S. mortality reached 35,000 deaths costing the national economy \$55 billion, it is predicted that the ratio will exceed 10 million deaths after 30 years.

As a bright side, bacterial viruses are natural predators and effective alternative filling an important gap in medical therapeutic practice. Bacterial viruses (bacteriophages or phages) are abundant primitive entities could recognize and bind bacterial cell and inject their genetic material to complete their obligatory or virulent life cycle within their host in the site of infection.

By the early 20th century, both Felix d'Herelle and Frederick Twort had proposed bacteriophage as a promising therapy against bacterial infections. First phage therapy trials were reported in the 1920s, while phage cocktails were effective treatment for wound infection reduce clinical symptoms within only 48 hr. The emergence of MDR bacteria crisis drive the scientific community to search for alternatives to combat infectious diseases

In the modern era multiple fronts have boosted phage in clinical practices; advanced technology provides sufficient data regarding phage biology, phage morphology and the genomic structure. Standardized in-vitro experiments and animal modeling trials reported a significant reduction in bacterial survival and effective treatment. In 2009, the FDA has given the clearance for clinical trials phase 1. As well, the intravenous administrated phage-based therapy is also be approved in 2019.



Biography:

Nada Adel is a research assistant at Zewail City of Science and Technology, Egypt. Holds MSc. In Microbiology and currently looking for a fully funded Ph.D. scholarship. I am currently resuming my research in phage therapy. As a detail-oriented and analytical professional with more than 6 years of experience in microbiology, molecular biology skills and bioinformatics tools. Through my experience, I have become well versed in conducting research and analyzing data in a detailed and scientific manner. Additionally, I have gained the ability to integrate superior organization and communication skills across all levels of research, allowing me to excel in both independent and team-oriented environments.

References:

1. WHO. (2014). Antimicrobial resistance. Global Report 2014. Bulletin of the World Health Organization. <https://doi.org/10.1007/s13312-014-0374-3>
2. Twort, F. W. (1915). An investigation on the nature of ultra-microscopic viruses. *The Lancet*. [https://doi.org/10.1016/S0140-6736\(01\)20383-3](https://doi.org/10.1016/S0140-6736(01)20383-3)
3. Twort, F. W. (1925). The discovery of the "bacteriophage." *The Lancet*. [https://doi.org/10.1016/S0140-6736\(01\)22250-8](https://doi.org/10.1016/S0140-6736(01)22250-8)

[2nd Webinar on Molecular Science and Technology, November 06, 2020, London, UK](#)

Citation: Dr. Nada Adel Fahmy, Viruses; Friends or Foes (Bacteriophage; Future of the Old Dogma), Webinar on Molecular Science and Technology, November 06, 2020