

The Necessity of Research on Antibiotic Alternatives and The Possibility of Use Phage Therapy to Replace Antibiotics

Abstract

Antibiotics came into widespread use in the 20th century after the discovery of modern penicillin and its excellent performance as an anti-infective medicine in warfare. Medical professionals know that antibiotics are not a panacea, but that does not stop medical professionals from being enthusiastic about using antibiotics to solve problems because it is faster and easier to use antibiotics than the complexity and ineffectiveness of other microbial treatments. This mentality led to the misuse of antibiotics in the 20th century and directly contributed to the increase in microbial resistance to antibiotics. After the 21st century, medical practitioners found that antibiotics were becoming less and less effective, and even "superbugs" emerged that were completely resistant to most antibiotics. Medical practitioners knew they needed to find a treatment alternative, and phage therapy, which had been proposed in the 20th century, was reintroduced. After cellular and animal experiments in the laboratory, the experimenters found that a single phage was not effective in treating microbial infections, so they proposed the use of a broad-spectrum phage mixture, also known as phage cocktail therapy. Reports of veterinary cases in dogs and an FDA-approved human clinical report confirm that phage cocktail therapy is effective in treating bacterial infections and burn experiments in mice confirm that phage cocktail therapy is also effective in suppressing large wound infections such as burns. And some studies on phages in other medical fields have demonstrated that phages can be involved in the work of the human immune system and enhance human immunity. Phage cocktail therapy has been shown to be an alternative to antibiotics in the treatment of microbial infections. However, most of this research is still limited to experiments in animals and treatment cases in animals. This suggests that the technology is still immature, and its effectiveness does not allow us to ignore its risks. However, successful human clinical cases only show that phage therapy is effective, so we need larger experiments and studies to prove the safety and effectiveness of phage therapy. Phage therapy is a promising treatment modality.