How Does Temperature Characterize Bacteriophage Infecting Mycobacterium smegmatis?

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The question asked was “How Does Temperature Characterize Bacteriophage Infecting Mycobacterium smegmatis?” The purpose of this experiment was to determine if an isolated bacteriophage can survive at 37°C so it can be used for phage therapy. The hypothesis was if bacteriophage specific for M. smegmatis can survive at 37°C then it can be used for phage therapy. For this experiment, a soil sample was collected and used to isolate bacteriophage. The bacteriophage was diluted by conducting a serial dilution, plating a sample of each dilution, and incubating the plates at 37°C, respectively. A plaque was then picked and purified by performing a serial dilution and plaque assay, respectively, and repeated twice. After the second purification, the plate that looked the most “webbed” was used to collect the phage lysate. Another serial dilution was performed on the lysate to determine the number of phage forming units (PFU) per milliliter. The lysate was then used to test virion activity after incubating the bacteriophage for 20 minutes, 40 minutes, and 60 minutes. The data showed that the isolated bacteriophage was able to inhibit the growth of M. smegmatis throughout the timed increments. Even though there was a decrease in active virions when incubation time increased, it was still effective after the 60-minute incubation period. As a result, the bacteriophage isolated from the soil could be used for phage therapy because it was able to survive at 37°C for 60 minutes and still inhibit the growth of M. smegmatis. Therefore, the hypothesis was supported.

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