Isolation and characterization of *Klebsiella pneumonia* Bacteriophage

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ABSTRACT

Klebsiella pneumonia is a Gram-negative, non-motile bacteria that are found ubiquitously in nature. It frequently causes human nosocomial infections especially in immune-compromised patients, leading to respiratory tract, urinary tract and blood stream infections. Due to the extensive usage of broad-spectrum antibiotics in hospitalized patients, the incidence of multidrug-resistance producing strains among clinical isolates has been increasing. Consequently, this has rekindled the interest in using phage therapy as a safe and effective treatment for multidrug resistance pathogens. The rapid ability of phages to lyse bacteria and their specificity make them effective alternative to antibiotics.

Results demonstrated a successful isolation of a *Klebsiella* bacteriophage isolated from sewage water. The bacteriophage was able to host and completely lyse the *Klebsiella* bacterium as a first case reported in Palestine. The results were confirmed several times to ensure consistency. It also gave positive results when spotted on different *Klebsiella* strains. In addition, one-step growth curve using a double layer plaque assay was performed to determine the phage life cycle phases of infection. It showed a latent period of about 3.5 h, burst period of 10 h and a burst size of about 102.5×10^6 PFU /plaque, Furthermore, SDS-PAGE results reveled that four major bands have been detected for phage structure proteins their size : 75KDa,100KDa,135KDa,and 180KDa .

We believe the isolated phage can be used as an effective and simple replacement to antibiotics used in the treatment of *Klebsiella pneumonia*.

Keywords: Bacteriophage**,** *Klebsiella pneumonia***,** plaque-forming unit (PFU)