Isolation and Characterization of an Environmentally Sourced Bacteriophage for Serratia marcescens

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While antibiotics have been used for decades to treat bacterial infections, the use of bacteriophages in the medical setting provides a potential for new treatments in an era of growing antibiotic resistance. In this study, environment samples were gathered from three locations in order to isolate a phage capable of infecting and lysing Serratia marcescens, a bacteria known to cause nosocomial infections. The environmentally sourced samples were added to separate vials of LB broth containing S. marcescens and incubated for 4 days, in order to enrich for S. marcescens specific bacteriophage. The cultures were then centrifuged to pellet the bacteria and the supernatant containing potential bacteriophage was collected. This phage solution was serially diluted, added to an LB top agar containing S. marcescens, plated, and incubated for 24 hours at 37*C. Viral plagues were observed in the preparation from the lake on Stillwater Parkway (41°23'54.7"N 87°20'10.0"W), indicating the presence of bacteriophage. The isolated bacteriophage were specific for S. marcescens, as plague formation did not occur when added to cultures of S. aureus and E. coli. Current work is aimed at further characterizing this bacteriophage through DNA isolation and genome sequencing to determine whether the isolate is a novel phage. These results demonstrate the ability to isolate specific S. marcescens lytic phage from environmental sources, and could lead to the development of novel therapeutic treatments against S.marcescens.

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