LYTIC CAPABILITY OF BACTERIOPHAGES (FAMILY MYOVIRIDAE) ON BURKHOLDERIA PSEUDOMALLEI

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Abstract. Burkholderia pseudomallei, a gram-negative bacillus found in soil and water, is the causative agent of melioidosis. It can produce a biofilm, which increases resistance to antibacterial agents. Bacteriophages (phages) have been suggested as alternative antibacterial agents. In this study, the ability of six phages (family Myoviridae) to lyse B. pseudomallei isolates was examined using a microplate phage virulence assay. The six phages were more efficient in lysing soil than clinical B. pseudomallei isolates. Phage ST79 had the highest lytic capability, independent of inoculating phage quantity with a 4-log reduction of bacterial numbers after a 4 hour treatment. Three modified derivatives of ST79 were developed by multiple passages on phage-resistant B. pseudomallei isolates, leading to an increase in lytic capability from 62% to 80%. Phage ST79 at a multiplicity of infection (MOI) of 10 significantly reduces biofilm formation determined by a colorimetric method. The recovery of B. pseudomallei growth following phage treatment needs to be overcome if these lytic phages are to be used as biocontrol agents of B. pseudomallei in the environment.

Keywords: Burkholderia pseudomallei, bacteriophage, biofilm