

Characterization of bacteriophage against *Enterococcus faecium* resistant to vancomycin isolated from chicken skin

ABSTRACT

Aims: To characterize bacteriophages with strong in vitro lytic activity against vancomycin resistant *Enterococcus faecium* before testing on the chicken skin for their efficacy. **Study Design:** An experimental was carried out to characterize two isolated bacteriophages against *Enterococcus faecium* and test for their efficacy on chicken skin. **Study Place:** The study was carried out in Laboratory of Vaccine and Immunotherapeutics, Institute of Bioscience, Universiti Putra Malaysia in Selangor, which is the most populous state in Malaysia. **Methodology:** Two host specific lytic phages against vancomycin resistant *Enterococcus faecium* strain FM8, designated as FM8-P1 and FM8-P2 were physiologically characterized. This includes determination of their adsorption rate, multiplicity of infection, and single step growth kinetics. The optimum pH and temperature for both bacteriophages activity were also determined before tested Original Research Article Azlan et al.; AFSJ, 10(1): 1-14, 2019; Article no.AFSJ.49654 2 on chicken skin at 4°C and 25°C, which represent chiller and room temperature in poultry production line. **Results:** Based on the result of single-step growth kinetics, the latent period of FM8-P1 was 35 min with a burst size of 460 particles per infected cells, while FM8-P2 has a shorter latent period (20 min) but a smaller burst size of 60 particles. The highest adsorption rate for FM8-P1 was 83% and FM8-P2 was 90% at 2 min and 4 min respectively. Both bacteriophages also exhibited a wide range of pH and temperature for their activity. **Conclusion:** The specificity, lytic activity and stability of FM8-P1 and FM8-P2 emphasized their potential in effectively eliminating the vancomycin resistant *Enterococcus faecium* strain FM8. However, further works are required to validate their in situ reliability.

Keyword: Bacteriophage; Vancomycin resistant enterococcus; *Enterococcus faecium*; Chicken skin