

***Fusobacterium ulcerans* Phage Isolation from the Environmental Sample**

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Abstract

Bacteriophage is a virus that infects the bacterium and it is very host species-specific. Antibiotic resistant is major concern in medical world. Therefore, a new alternative treatment is vital to combat against the persistent superbugs. This study is to isolate host-phages extracted from sewages and marsh water and tested against *Fusobacterium ulcerans* (ATCC 49185). Sewage water and marsh water samples were collected in Shah Alam, Selangor and filtered through 6 µm, 0.45 µm and 0.22 µm syringe filter membrane. The isolation of the phages-specific for *Fusobacterium ulcerans* were conducted through Viral Suspensions Phage Assay and Double Layer Assay (DLA) measured by the presence of plaque. Bacteriophage titers were quantified through number of phage particles in the pure stock of phage suspensions that are able to infect *Fusobacterium ulcerans*. 329 plaques forming unit were isolated from the marsh water and 51 plaques forming unit were isolated from sewage. The cultivation of phages from both water samples were subjected to 9.7×10^9 Phage Forming Unit (PFU/ ml) for marsh water and 1.39×10^9 PFU/ml sewage water respectively on six replicates. The results on marsh water shown (2.2×10^4 , 1.8×10^5 , 1.5×10^6 , 1.4×10^7 , 1.1×10^8 and 9.8×10^8 PFU/ml) and (4.5×10^3 , 3.9×10^5 , 6.1×10^6 , 8.2×10^6 , 1.2×10^8 and 1.4×10^9 PFU/ml) for sewage water. The study revealed that virus titre increased based on the number of PFU/ml and constantly increased based on dilution factor. The increased titre suggest that virus isolate have higher therapeutic against *Fusobacterium ulcerans*. The study of the isolation of phages-specific for *Fusobacterium ulcerans* is important for the prospective intervention on tropical skin ulcer infection.

Keywords:

Bacteriophage, *Fusobacterium ulcerans*, Tropical ulcers, skin ulcer infections, Phage assay, viral titration.