

Abstract

Escherichia coli-ESBL (or ESBL-producing *E. coli* or *E. coli*-ESBL) are *E. coli* strains capable of producing extended-spectrum β -lactamases (ESBL). These enzymes can hinder the effectiveness of many β -lactam drugs. Therefore, it is difficult to use antibiotics to treat the diseases caused by *E. coli*-ESBL. In the midst of finding alternative therapeutic approaches to control drug resistant bacteria, bacteriophage therapy is considered as a most promising one. The aims of this study are to isolate and classify a bacteriophage specific to *E. coli*-ESBL and to examine its host range. In this study, a bacteriophage, ϕ UBU-ESBL, was isolated from water collected from a waste water treatment pond. It was found to produce small clear plaques of 1-2 mm in diameter and to inhibit only *E. coli*-ESBL, but not other bacteria used in this study. Its genome was digested by the restriction enzyme *Bam*HI indicating that the genome was double stranded DNA. As revealed by transmission electron microscopy, ϕ UBU-ESBL had an isometric head (50 ± 3.4 nm in diameter) with a noncontractile tail (290 ± 15.1 in length). Based on its genomic and morphological characteristics, ϕ UBU-ESBL was classified as members in the family *Siphoviridae*. This study provides preliminary information suggesting that ϕ UBU-ESBL had potential for further study towards its application as a therapeutic agent against *E. coli*-ESBL infectious diseases.