

Efficacy and potential of phage therapy against multidrug resistant *Shigella* spp

ABSTRACT

Shigella-infected bacillary dysentery or commonly known as Shigellosis is a leading cause of morbidity and mortality worldwide. The gradual emergence of multidrug resistant *Shigella* spp. has triggered the search for alternatives to conventional antibiotics. Phage therapy could be one such suitable alternative, given its proven long term safety profile as well as the rapid expansion of phage therapy research. To be successful, phage therapy will need an adequate regulatory framework, effective strategies, the proper selection of appropriate phages, early solutions to overcome phage therapy limitations, the implementation of safety protocols, and finally improved public awareness. To achieve all these criteria and successfully apply phage therapy against multidrug resistant shigellosis, a comprehensive study is required. In fact, a variety of phage-based approaches and products including single phages, phage cocktails, mutated phages, genetically engineered phages, and combinations of phages with antibiotics have already been carried out to test the applications of phage therapy against multidrug resistant *Shigella*. This review provides a broad survey of phage treatments from past to present, focusing on the history, applications, limitations and effective solutions related to, as well as the prospects for, the use of phage therapy against multidrug resistant *Shigella* spp. and other multidrug resistant bacterial pathogens.

Keyword: Bacillary dysentery; Multidrug-resistant; Phage therapy; *Shigella*