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Phage Therapy for Control of Bacterial Diseases

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Abstract

Phage therapy is one of the most important control strategies envisaged for the management of bacterial diseases in the aquatic environment. There are no other effective alternative approaches for the natural control of bacterial diseases while phage therapy remains the best method which has not yet been exploited. The occurrence, infectivity, lytic activities, therapeutic potentials and efficacy of the bacteriophages of *Bacillus spp* / Vibrio *spp* for control of pathogenic bacteria diseases such as *Vibrio vulnificus, V. damsela, and V. furnissi* in the cultures of crustaceans are presented. An ideal method for long term storage and recovery of the lytic bateriophages and validation of the usefulness of phage therapy are reviewed. The application and efficacy of the phages of *Bacillus/ Vibrio* against the bacterial pathogens Vibrios in the aquaculture of crustaceans are considered. Agar bioassay method and one-step growth experiments of the lytic phages infected *Vibrio* spp and *Bacillus spp*., *in vivo and in vitro* experiments to determine the efficacy of phage therapy on the host bacterial population are described. The review highlight the occurrences of plagues of lytic phages of *Vibrio* sp and *Bacillus* spp and their control effects of vibriosis both *in vivo* and *in vitro* in the crustaceans, thus established the application and efficacy of the phages of *Vibrio/ Bacillus* against the pathogenic *Vibrio* spp. Development of specific phage therapy or a cocktail of phages to a wide variety of systems is considered to represent an interesting emerging alternative to antibiotic therapy and vaccination.

Keywords: phage therapy, bacterial diseases, Vibriosis, probiotics, bacteriophages, antimicrobials, antibiotic resistance, crustaceans, shrimp, lobster, crab, artemia.