

Experimental therapeutic challenge of two bacteriophages isolates against *E. coli* serogroup causing diahrea

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ABSTRACT

The study aimed to determine the efficacy of selected bacteriophages in the treatment of experimental diarrhea in a group of laboratory animals infected with *Escherichia coli* used as challenge bacteria. Bacteriophage was administered orally, up to three times, 24 hours after administration of challenge bacteria, and following diarrhea. Weight change, diarrhea duration, diarrhea severity, diarrhea degree score, and the rate of challenged *E. coli* bacteria shedding over the course of six days were the parameters utilized to determine if changes had occurred. The bacteriophages that were tested for treatment were successful in making a qualitative change in these parameters. These bacteriophages produced specific changes in all parameters without affecting the normal flora shed in the feces. These results indicate that the selected bacteriophages had an effective effect in treating experimental diarrhea in laboratory animals after giving a challenge bacterium orally.

Keywords: *phage therapy, E. coli, experimental trails, Guinea pigs*

1. INTRODUCTION

The rise of antibiotics resistant bacteria has become a factor that has a qualitative impact on human and animal health. Concern has been raised about this issue recently and especially with multidrug-resistant bacteria among the pathogenic microorganisms. However, there is a lot of pressure to limit and reduce the use of antibiotics in animal production. Similarly, drug-resistant *E. coli* has been on the rise in recent years (1, 2, 3). In addition, the concern that bacteria that consistently select for resistance and are compatible with the use of antibiotics as animal treatments might be harmful to human health by transferring drug-resistant genes to other pathogenic bacteria.

Therefore, there is an urgent need to find and obtain a practical and safe alternative to the use of antibiotics in the technology of the animal production industry, and it can be used as prevention and treatment. Bacteriophages are viruses that have the excellent ability to kill pathogenic bacteria, and they are considered as a distinctive alternative because they have the characteristic of non-toxicity and they multiply when injected into the host bacteria and their number increases because they can destroy the bacterial population (4, 5, 6, 7, 8). In 1915 (8) and 1917 (9), respectively, Twort and D'Herelle separately discovered a phage, a virus consisting of a protein closure covering a nucleic acid that could be either DNA or RNA.