Isolation and selection of *Campylobacter* bacteriophages from poultry carcasses

Carla A.O.C.M. Carvalho, M. Susano, A. Nicolau and J. Azeredo

Centro de Engenharia Biológica, Universidade do Minho, Campus de Gualtar, 4700-057 Braga, Portugal

E-mail: carlacarvalho@deb.uminho.pt

Campylobacter is a gram-negative bacterium regarded as the leading cause of enteric illness in the United States and in several Member States of the EU. Poultry meat products are considered a major source of Campylobacteriosis. The use of antibiotics in animal production poses a threat to human health through the emergence of antibiotic resistant bacteria. Bacteriophages can provide an effective alternative to antibiotics in animal production. Bacteriophages are viruses highly specific, affecting only the target bacteria. They are self-replicating and self-limiting and non-toxic. In addition, they potentially appear in any environment where their specific hosts proliferate.

There are very few reports on the isolation of *Campylobacter* bacteriophages, many of which are focused on their isolation for typing purposes. In this study, 47 *Campylobacter* bacteriophages were isolated from 12 samples of free-range chicken carcasses (skin, intestines) using 16 food and clinical *Campylobacter coli* and *Campylobacter jejuni* strains previously checked as free of prophage

The criteria to select the group of bacteriophages to be used in future work were the wideness of the lytic spectrum, the ability to complement other spectra and the strength of the lytic ability. For this purpose the isolated bacteriophages were screened against 28 *Campylobacter* strains. This allowed the selection of two bacteriophages: PT3A and PT4C. Bacteriophage PT3A showed one of the widest spectra of lysis; bacteriophage PT4C showed a wide spectrum of lysis and a particular strong lytic action on some bacterial strains. These two bacteriophages were also tested and proved to be lytic phages. In a context of phage therapy these bacteriophages can be considered good candidates for further animal trials.

Keywords: Bacteriophage; *Campylobacter*; Poultry

Aknowledgements: Fundação para a Ciência e a Tecnologia, Portugal