T7-like bacteriophages to control biofilm forming bacteria

Sanna M. Sillankorva[1,3], H. Pospiech[2], J. Azeredo[1], and P. Neubauer[3]

[1] Centre of Biological Engineering, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal

[2] Department of Biochemistry and [3] Department of Process and Environmental Engineering, University of Oulu, Linnanmaa, 90570 Oulu, Finland

E-mail: s.sillankorva@deb.uminho.pt

Bacteria are present in different environments, such as in nature, industry and health related surfaces, either attached or in the form of biofilms. Biofilms are commonly responsible for severe problems in industry and constitute a major health risk. Biofilms are especially difficult to eradicate and their removal and destruction has been for long attempted using chemical biocides. These agents usually yield very low biofilm removal amounts, have negative environmental impacts and the emergence of biocide resistant bacteria represents one of the major drawback of their use.

This work focuses the study of some T7-like bacteriophages (phages) in the control of bacteria isolated from dairy and pulp and paper industry. Some of the studied and characterized biofilm forming bacteria are opportunistic pathogens to humans, e.g. *Enterobacter faecalis* and *Staphylococcus* sp.. The phages were isolated from wastewater treatment plants and industrial effluents and the selection of the best host-phage arrangement was done after examination of the lytic spectrum of phage infection. Only broad spectrum and lytic phages were selected for further morphological studies by TEM, molecular characterization and also studies of the phage properties such as latent and eclipse periods, burst size and adsorption rate. Phage performance in different conditions, such as shaking speed, pH and cell growth stage was also studied and the phage inactivation temperature was assessed.

Keywords: isolation, characterization, biofilm, control

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