Bacteriophages in a Fight against Serratia marcescens

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Bacterial resistance against antibiotics is increasingly becoming a serious health problem. Bacterial infections are becoming harder to treat, which leads to increase in mortality and higher medical cost. Some bacteria, such as Serratia marcescens, are capable of forming biofilms that additionally protect them from antibiotics. The alternative to antibiotics could be bacteriophages, viruses that attack specific bacteria. We have therefore investigated the efficiency of bacteriophages in reducing the formation of S. marcescens biofilms. Two bacteriophages (A and C) specific for S. marcescens, were isolated and propagated from a water sample taken from a wastewater treatment plant. They were multiplied and quantified. Effect of different dilutions of bacteriophages on the formation of the biofilms of S. marcescens were subsequently tested with crystal violet and quantified with spectrophotometer. The results show that Bacteriophage A successfully prevented the formation of the biofilm even at very high dilution, while the bacteriophage C did not show any effect. The lack of effect could be due to the instability of bacteriophages in the buffering agent. Based on the results of our study, we can conclude that bacteriophages, in addition to effectively destroying individual planktonic cells, also prevent the formation of a biofilm of S. marcescens. In further studies, we could test the effectiveness of bacteriophages on already existing biofilm of S. marcescens and effect of bacteriophages on other bacteria. There is a great potential in the use of bacteriophages as disinfectants and for treatments but more research needs to be done.

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