

Abstract

Bacteriophages, which infect the bacteria, form a vast group of viruses, are one of the most wide-spread organisms. Since their discovery they have been used to treat various diseases caused by the bacteria, but the development of antibiotics hindered their usage significantly. Since various bacteria strains acquire multiresistance nowadays more attention is brought to the usage of bacteriophages once again. But since the application of native bacteriophages has its limitations, e.g. too broad or too narrow host range, low efficiency, they can be overcome using molecular modifications. The goal of this thesis is to provide a brief outline of the therapeutic utilization of phages in bacteriophage therapy. The majority of this thesis focuses on potential methods of acquiring modified phages and their subsequent usage. So prepared bacteriophages characterized by their specific modified properties are not only used as bactericidal reagents but also as a tool to enhance the efficiency of antibiotics, drug delivery, diagnostics and vaccine development. Various studies describe the improvement or alteration of properties gained by phage modifications. Their clinical application, however, is still limited due to small number of *in vivo* trials.