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Removal of bacterial biofilm on intestinal cell surface in vitro using bacteriophage

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Ba biofilm is a bacterial aggregate containing bacteria and secreted substances formed through quorum sensing. Bacteria inside a biofilm are much more resistant to antibiotics. Biofilm formed on the surfaces of human intestine causes various diseases. *Escherichia coli* O157:H7 produces shiga toxin and makes biofilm causing food poisoning. We induced formation of biofilm of these bacteria on human intestinal cell lines CT-26 and SNU-C4 *in-vitro*. Three phages infecting *E. coli* O157:H7 were selected and used to make a phage cocktail for controlling the bacterial infection. After phage treatment, remaining bacteria were counted and the culture was observed under microscope using immunostaining. The cocktail was effective in removing bacterial biofilm on surfaces of the cultured cells. The removal was in both time and dose-dependent fashion.



 Biofilm is a phenomenon in which a group of mrcroorganisms adhere to a solid surface together. The reason for this phenomenon is that EPS (extracellular ploymeric substance) is entangled with each other. Biofilm is caused by various factors, such as specific or non-specific attachment site recognition on the cell surface, and nutritional and sub-inhibitory concentrations of antibiotics.

Biography

Wonki Kim is a graduate student in Hankuk University of Foreign Studies, Korea. He is working on the use of bacteriophages for therapeutic purposes and he is conducting host range expansion of bacteriophages.

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