

Methicillin Resistant Staphylococcus aureus Specific Bacteriophage Isolation from Sewage Treatment Plant and in vivo Analysis of Phage Efficiency in Swiss Albino Mice

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Abstract : Antibiotic resistance is the worldwide threat to human health in this century. Excessive use of antibiotic after their discovery in 1940 makes certain bacteria to become resistant against antibiotics. Most common antibiotic-resistant bacteria include Staphylococcus aureus, Salmonella typhi, E.coli, Klebsiella pneumonia, and Streptococcus pneumonia. Among all Staphylococcus resistant strain called Methicillin-resistant Staphylococcus aureus (MRSA) is responsible for several lives threatening infection in human commonly found in the hospital environment. Our study aimed to isolate bacteriophage against MRSA from the hospital sewage treatment plant and to analyze its efficiency In Vivo in Swiss albino mice model. Sewage sample for the isolation of bacteriophages was collected from SDMH hospital sewage treatment plant in Jaipur. Bacteriophages isolated by the use of enrichment technique and after characterization, isolated phages used to determine phage treatment efficiency in mice. Mice model used to check the safety and suitability of phage application in human need which in turn directly support the use of natural bacteriophage rather than synthetic chemical to kill pathogens. Results show the plaque formation in-vitro and recovery of MRSA infected mice during the experiment. Favorable lytic efficiency determination of MRSA and Salmonella presents a natural way to treat lethal infections caused by Multidrug-resistant bacteria by using their natural host-pathogen relationship.

Keywords : antibiotic resistance, bacteriophages, methicillin resistance Staphylococcus aureus, pathogens, phage therapy, Salmonella typhi

Conference Title : ICB 2019 : International Conference on Bacteriophages

Conference Location : Kuala Lumpur, Malaysia

Conference Dates : February 11-12, 2019