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Evalvuation of efficacy of saclac globule formulation of indigenous bacteriophages against multidrug resistant bacterial pathogens in water microcosm

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Abstract

Bacteriophages are the viruses of prokaryotes that can either instantly kill a bacterial cell or integrate their genome into the host chromosome. In this study, potent lytic phages were isolated from the natural resources. They were characterized and their infectivity abilities against specific pathogens were checked. Saclac globule formulations using efficient phages were prepared and their shelf-life was checked at 4°C and 30 °C. Efficacy of saclac globule monovalent formulations of indigenous φ SPB (Salmonella phage) and BVPaP-3 (Pseudomonas phage) were evaluated against Salmonella enterica serovar Paratyphi B and Pseudomonas aeruginosa respectively in the water microcosms prepared using river water and swimming pool water spiked independently with the mentioned respective pathogens at different environmental parameters,viz.,growth phase of the cell (log and stationary), incubation conditions (shaking and static) and varied MOI (multiplicity of infection) values (MOI<1, MOI=1, MOI=50 and MOI=100). Saclac globules contain goat milk sugar that keeps the bacteria in a log phase of growth for long period of time. At different MOI values, there was a great difference in the inactivation rate of Salmonella enterica serovar paratyphI B and Pseudomonas aeruginosa with maximum inactivation rate at MOI=100.There was a significant difference ($P< 0.05$) in pathogen inactivation rate at shaking and static condition. The rate of inactivation of log phase cells were higher than the stationary phase cells at shaking as well as static conditions at MOI=50 and MOI=100.

Biography

Dr. Sangeeta Ahiwale has completed her Ph.D.at the age of 39 years from Savitribai Phule Pune University, Maharashtra, India. She is working as Associate Professor in Rayat Shikshan Sanstha's Mahatma Phule Mahavidyalaya, Pune, Maharashtra, India. She has over 13 publications on her name in various journals of national and international repute. She has presented research papers in various national and international conferences and symposia. Her papers have been cited over 148 times and her publication H-index is 6. She has received Prof. J.V Bhat best research paper award for paper entitled "Bacteriophage mediated gold nanoparticles synthesis and their antibiofilm activity", published in Indian Journal of Microbiology. She has received Maharashtra state research award in 2013. She provides consultancy in bacteriophage technology to various research and institutions.

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