عنوان مقاله:

Isolation and Characterization of Lytic Bacteriophages from Wastewater against Listeria monocytogenes

محل انتشار:

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خلاصه مقاله:

Background and Aims: In the current study, two bacteriophages were isolated from the wastewater sources and characterized by lytic activity against the Listeria monocytogenes (L. monocytogenes) bacterium. Materials and Methods: ۵۰ wastewater samples were collected from the disposal sites. The phages were isolated from the treated samples using the double agar overlay method with L. monocytogenes as the host bacterium. Plaque morphology, temperature, pH, titration of phage lysate, host range, and scanning electron microscopic morphology were used to characterize the isolated phages. Results: Bacteriophage was found in two samples taken from wastewater treatment plants. Phages were proliferated and released under optimal bacterial growth conditions at pH ۷; ۳۷ °C in ۳۶-hour incubation. A ۱۰:۱ ratio of bacterial cells to phage produced the greatest lytic ability. The highest phage titrated under optimal conditions was estimated at ۹×۱۰۹ pfu/ml. The scanning electron microscopic image revealed a bacteriophage morphology corresponding to the head and tail group. The host range observations demonstrated that L. monocytogenes were unique to the isolated phage. The elimination of L. monocytogenes growth in milk and whey samples revealed that this bacteriophage targeted bacteria and resulted in a ۷۵% reduction in bacterial contamination. Conclusion: The results suggest that the phages obtained from L. monocytogenes may be utilized to combat this .pathogen in dairy, agri-food, wastes, and other associated infections

کلمات کلیدی:

Bacteriophage, Food safety, Listeria monocytogenes, Phage therapy, Wastewater