

Strategy for Purification of the Staphylococcus Aureus Bacteriophages

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Extended Abstract

Quality control of bacteriophage preparations is critical for ensuring their safety and efficacy in phage therapy. This study focused on optimizing phage purification conditions, with particular emphasis on evaluating the impact of various detergents on phage stability. Tangential flow filtration (TFF) was employed as the primary method for phage purification, ensuring high recovery rates and maintaining phage viability. The study aimed to optimize detergent concentration during sample concentration processes while continuously monitoring phage viability. Phage titer was quantified using the double-layer agar method [1,2].

The results indicated that detergent treatment significantly enhanced sample purity by reducing the total protein content, endotoxin levels, and other contaminating impurities. Analytical techniques such as high-performance liquid chromatography (HPLC), protein and endotoxin assay demonstrated that untreated samples exhibited higher protein and endotoxin concentrations, suggesting that detergent treatment influences the composition of phage preparations. Notably, certain bacteriophage species exhibited increased sensitivity to detergent exposure, highlighting a species-specific variation in detergent tolerance.

These findings underscore the necessity of optimizing detergent conditions to achieve an optimal balance between impurity removal and preservation of phage stability. This optimization process provides critical insights for improving the preparation of bacteriophage preparations in therapeutic applications.

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References

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