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Protocol collection: Phage DNA isolation and chemical analysis

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Manuscript citation:
Borges A, Radkov A, Thuy-Boun PS. (2022). A workflow to isolate phage DNA and identify nucleosides by HPLC and mass spectrometry. https://doi.org/10.57844/arcadia-1ey9-j808

Protocol status: Working
We use this collection and it's working

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Keywords: phage genome modifications with mass spectrometry, phage dna isolation, chemical analysis bacteriophage, phage genome modification, analysis of phage nucleoside, phage nucleoside, bacteriophage, phage growth, phage, mass spectrometry, liquid chromatography, high performance liquid chromatography, degradation by bacterial immune system, performance liquid chromatography, bacterial immune system, dna extraction, bacteria, genome

Abstract

Bacteriophages (phages) are viruses that infect bacteria. Some phages chemically modify their genomes to protect them from degradation by bacterial immune systems. We can detect phage genome modifications with mass spectrometry (MS) and high-performance liquid chromatography (HPLC) of phage nucleosides. This collection contains protocols for the entire process: phage growth and concentration, DNA extraction, and chemical analysis of phage nucleosides. We optimized these protocols using *E. coli* phage T4 and *B. subtilis* phage SPO1.

Files

SEARCH

Protocol

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Phage amplification and concentration

VERSION 1

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Protocol

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Phage DNA extraction with Monarch kit and digestion to single nucleosides

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Phage DNA extraction with phenol-chloroform and digestion to single nucleosides

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Nucleoside analysis with high performance liquid chromatography (HPLC)

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Nucleoside analysis with liquid chromatography–tandem mass spectrometry (LC–MS/MS)

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