



Letter to Editor

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Phage Therapy to Prevent Nosocomial Bacterial Pneumonia in Patients with Severe COVID-19 in 2020

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Abstract

The COVID-19 was reported to be a pandemic, according to the World Health Organization (WHO). Secondary bacterial pneumonia exacerbates respiratory problems and increases mortality in patients with COVID-19. Recently, 50% of the causes of death in these patients have been reported as nosocomial pneumonia in these cases. These bacteria have become multidrug-resistant. Phage production is a cost-benefit. Inhalation of phage cocktail with mesh nebulizer can be suitable to prevent secondary bacterial pulmonary infection in patients with severe COVID-19. To prevent secondary bacterial pneumonia and reduce mortality in patients with severe type COVID-19 and patients who are under a ventilator for a long time, the use of phage cocktail product by inhalation with mesh nebulizer device is recommended.

Keywords: Pneumonia; COVID-19; Prevention; Phage therapy

Dear Editor

The COVID-19 was reported to be a pandemic, according to the World Health Organization (WHO). The SARS-COV2 is transmitted to humans through the respiratory system. The virus stimulates the immune system to secrete inflammatory substances and cytokine storm. This event can induce multi-organ damage. Secondary bacterial pneumonia exacerbates respiratory problems and increases mortality in patients with COVID-19. Recently, 50% of the causes of death in these patients have been reported as nosocomial pneumonia in these cases. The most common etiology of secondary bacterial pneumonia is *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Acinetobacter baumannii*. These bacteria have become multidrug-resistant due to improper rational usage of antibiotics, genetic mutation, and enzyme production. Phage therapy can be used to reduce the rate of these infections [1].

Phage production is a cost-benefit. Bacteriophages have recently been reported as an appropriate prevention and treatment option at the In-vitro, In-vivo, and several clinical trials. For optimal

use of bacteriophages for these cases, the use of a phage cocktail that includes different phages is recommended. Phage cocktail not only increases the host range of phages but also reduces the likelihood of phage resistance [2].

Inhalation of phage cocktail with mesh nebulizer can be suitable to prevent secondary bacterial pulmonary infection in patients with severe COVID-19 and patients who are under a ventilator for a long time. The mesh nebulizer device produces the least changes in the structure of bacteriophages by producing aerosols with dimensions of less than 4 micrometers. It also minimizes decrease bacteriophage titers and active phages [3].

An inhaled phage cocktail with mesh nebulizer device can prevent secondary pulmonary bacterial infection in patients with COVID-19. To prevent secondary bacterial pneumonia and reduce mortality in patients with severe type COVID-19 and patients who are under a ventilator for a long time, the use of phage cocktail product by inhalation with mesh nebulizer device is recommended.

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Consent for publication

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Conflict of Interest

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