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MINI REVIEW

# Interaction between Chronic Influenza and COVID-19: Novel Aspects of Immune System Combat

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## Abstract

This abstract provides an overview of two highly contagious viruses - influenza viruses and the COVID-19 virus, causing severe acute respiratory illness. The paper examines common and unique characteristics of the viruses, their structure, transmission mechanisms, and pathogenesis. Special attention is given to differences in clinical manifestations, spread dynamics, and strategies to combat each of them. The consequences of epidemics and public health measures aimed at preventing virus spread are analyzed. This abstract offers a comprehensive overview of key aspects of influenza and COVID-19 virology, contributing to a contemporary understanding and fight against infectious diseases.

## Introduction

In recent years, the world has faced challenges presented by two distinct but highly contagious viruses - COVID-19 and influenza. Both cause acute respiratory illnesses and pose significant threats to public health. In this article, we will explore the similarities and differences between these two viruses, enhancing our understanding of their nature, transmission, and approaches to combat them [1-3].

## Similarities

- Respiratory Symptoms:** Both viruses induce respiratory symptoms such as cough, difficulty breathing, sore throat, and fever. These symptoms can be severe and lead to pneumonia.
- Transmission Mechanism:** Both viruses are primarily transmitted through airborne droplets generated by coughing or sneezing of infected individuals. Contact with contaminated surfaces can also be a source of infection.
- High Contagiousness:** Both COVID-19 and influenza have a high level of contagiousness, facilitating rapid spread within communities.

## Differences

- Pathogenesis and Disease Course:** Influenza is typically characterized by a sudden onset of symptoms, sometimes with pronounced muscle pain and high fever. In contrast, COVID-19 may manifest

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more gradually, and some infected individuals may remain asymptomatic.

2. Incubation Period and Infectiousness: The incubation period for COVID-19 can be longer, and the infectious period persists even in asymptomatic carriers. The incubation period of Covid-19 is 14 days [4]. With influenza, individuals are typically most infectious during the first days of illness. The incubation period of influenza ranges from several hours to 4 days. On average, 2-3 days [5].
3. Treatment and Vaccination: Effective vaccines against influenza are available, facilitating control over its spread. For COVID-19, vaccines have also been developed, but different virus strains and the constantly changing epidemiological situation present additional challenges.
4. Post-Consequences: COVID-19 can lead to more prolonged consequences known as "long COVID," including fatigue, breathing issues, and cardiovascular system disturbances. In contrast, influenza usually does not result in such extended consequences.

In the field of medical science, it has become evident that within the bodies of some patients, there exists a complex dynamic interaction between various viruses, including influenza viruses and the COVID-19 virus. An intriguing area of research offers new insights into how chronic influenza may influence the immune system's response, making it more or less effective in combating the COVID-19 virus.

### Immunological interaction

It has been found that some patients who have experienced chronic influenza develop antibodies and an immune response that, in some cases, also provides some protection against the COVID-19 virus. This is explained by the fact that certain antibodies produced during exposure to influenza viruses may have overlapping activity against other viruses, including SARS-CoV-2.

### Cross-reaction mechanism

This phenomenon is known as cross-reaction, where the immune response to one virus affects other viruses. In the case of chronic influenza and the COVID-19 virus, certain structural similarities

between the viruses' proteins can trigger cross-reaction, enhancing the immune response and providing additional tools to combat infection.

### Comprehensive studies

However, it is important to note that these studies are preliminary, and a complete understanding requires additional extensive research. Not all patients with chronic influenza may survive COVID-19 more easily, and factors such as overall health, age, and other chronic conditions also play a crucial role.

### Practical implications

If the influence of chronic influenza on combating COVID-19 is confirmed, it could suggest new treatment and prevention strategies. Vaccines capable of stimulating cross-reactive antibodies could be developed to enhance the immune system of vulnerable populations.

### Conclusion

The interaction between chronic influenza and the COVID-19 virus presents an interesting field of research that could alter our understanding of virology and immunology. Comprehensive studies and a deeper understanding of these interactions could be a key element in developing effective methods for treatment and prevention, especially in the face of the constantly changing epidemiological situation.

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