Scientists Identify Interferon-Gamma as Potential SARS-CoV-2 Antiviral

The lead project scientists suggest testing interferon-gamma further, alone and in combination with other treatments.

December 14, 2023 By National Institute of Allergy and Infectious Diseases

---

Conditioning the lungs with interferon-gamma, a natural immune system protein (cytokine) best known for fighting bacterial infections, appears to be a strong antiviral for SARS-CoV-2, according to National Institutes of Health scientists and colleagues.

Their new study, published in Nature Communications, shows in two different mouse models that when a bacterial infection triggers the release of interferon-gamma in the lungs, those animals subsequently are protected from infection by SARS-CoV-2, the virus that causes COVID-19. The investigators further report that using recombinant interferon-gamma in the nose of study mice at the time of viral exposure substantially reduces SARS-CoV-2 infection and COVID disease.

The lead project scientists suggest testing interferon-gamma further, alone and in combination with other treatments, to limit early SARS-CoV-2 infection in people. They also hypothesize that people with prior bacterial infections that naturally release interferon-gamma in their lungs may be less susceptible to COVID-19.

NIH's National Institute of Allergy and Infectious Diseases (NIAID) led the project with collaborators at Malaghan Institute of Medical Research in New Zealand.

Previously, the research team had observed that a vaccine for tuberculosis, known as BCG, given intravenously to establish a mild lung infection subsequently provided strong protection against SARS-CoV-2 challenge. The new study reveals that interferon-gamma, released by the immune system in response to BCG vaccine, is required for the observed SARS-CoV-2 antiviral immunity. The investigators also examined the mechanism by which interferon-gamma protects against SARS COV-2 and presented evidence that the cytokine targets lung epithelial cells, a major site of early viral replication, thus limiting its spread.

When the project began, the research team did not expect interferon-gamma to be the necessary component for SARS-CoV-2 protection. Traditionally, other forms of interferon – alpha, beta and lambda – are known to fight viruses, but not gamma. Their findings thus uncover a newly appreciated anti-viral function for this cytokine.

This NIAID Now blog article was published by the National Institute of Allergy and Infectious Diseases on December 12, 2023.

© 2026 Smart + Strong All Rights Reserved.
http://beta.docker.cancerhealth.com/article/scientists-identify-interferongamma-potential-sarscov2-antiviral