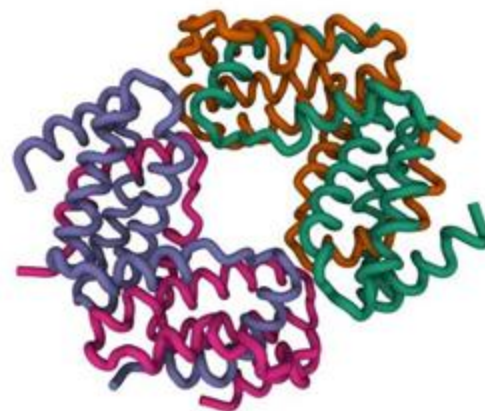


Blockage of interferon-gamma for prevention of polymicrobial synergy

Boosting Immunity, Preventing Infection—Targeting the Root of Respiratory Disease

Background:

Influenza virus and *Streptococcus pneumoniae* are the primary causes of respiratory infections in humans. While influenza alone can lead to pneumonia, secondary bacterial pneumonia significantly increases morbidity and mortality, as seen during the 1918-1919 pandemic. The viral-bacterial synergy is driven by factors such as direct damage to epithelial barriers, viral inflammation, and impaired neutrophil function,, all of which enhance susceptibility to bacterial infections. Notably interferon-gamma (IFN- γ), produced in response to influenza, suppresses resident alveolar macrophages' ability to clear bacteria, further increasing vulnerability to secondary pneumonia. This



interaction between viral and bacterial pathogens contributes to high mortality. Source: istockphoto.com

Technology:

The present invention describes methods for treating and preventing secondary infections following viral respiratory illnesses. One part of the invention involves treating a subject with a viral respiratory infection by administering a therapeutic agent that inhibits interferon-gamma (IFN- γ) which promotes inflammatory lung injury during infection. Another aspect focuses on preventing polymicrobial synergy in individuals at risk by using the same therapeutic agent to block IFN- γ , preventing the exacerbation of bacterial infections in the presence of viral pathogens. A third part addresses preventing bacterial infections in susceptible subjects due to IFN- γ production in the lungs. By identifying how IFN- γ , produced in response to viral infections like influenza, the invention restores the ability of alveolar macrophages to clear bacteria, the preventing host is susceptibility to secondary infections such as pneumococcal pneumonia. Specifically, neutralizing IFN- γ improves bacterial clearance and prevents severe complications, preserving the body's innate immune defenses.

Intellectual Property

US9598488B2

Technology Readiness

Ready for licensing

Advantages:

- Enhanced bacterial clearance
- Prevention of secondary infections
- Targeted immune modulation
- Broader therapeutic potential

Applications:

- Treatment of viral respiratory infections
- Polymicrobial synergy prevention

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