

Interferon shows promise as flu therapy

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A molecule the body produces naturally in response to virus infection could be a viable flu treatment in the future, suggest researchers at the Francis Crick Institute in London.

Their study in mice has found that the antiviral, called interferon lambda ($\text{IFN}\lambda$), can control flu infection without sparking further inflammation.

The team, led by Dr Andreas Wack at the Crick, tested interferon lambda and a second interferon called alpha ($\text{IFN}\alpha$) in mice to explore their potential as therapies for the influenza A virus. The results were recently published in *EMBO Molecular Medicine* [opens in new window](#).

They were funded by the MRC, the Crick, the Danish Council for Independent Research and a BBSRC-GlaxoSmithKline studentship. They worked with colleagues from Aarhus University in Denmark and the respiratory therapy team at GlaxoSmithKline in the UK.

There are between three and five million cases of severe illness caused by [influenza virus](#) each year around the world, and up to 500,000 deaths. Influenza A is capable of causing devastating pandemics.

The researchers used a mouse model that responds to flu in a similar way to humans to investigate whether either interferon could stimulate an [antiviral response](#) that helped fight [flu infection](#).

They found that [interferon alpha](#) reduced viral load but made disease symptoms worse because it increased inflammation and tissue damage in the lung.

In comparison, mice treated with interferon lambda when [flu symptoms](#) set in recovered better and showed increased survival over mice given no treatment or interferon alpha. This is because the negative side effects seen in mice treated with interferon alpha were absent. 80% of mice survived when given interferon lambda compared with 50% of untreated mice and 20% of [mice](#) given interferon alpha.

The scientists tested the effect of interferon lambda on human cells in the lab and found the same response patterns as in mouse cells. The next step is to test the therapy in people who have flu.

Dr Wack is optimistic: "We know interferon lambda has a decent safety profile as it has already been tested for safety in humans. It passed phase 1 and 2 clinical trials as a hepatitis C therapy before better treatment options were found for that disease. If it were to be considered as an influenza treatment, this means the starting point to test it would be

relatively advanced."

The team hope interferon lambda's existing safety profile means that if a new pandemic influenza strain hit the population in the near future, it might be considered as a treatment option. The team suggest that it may also be useful to treat other families of viruses that cause respiratory disease.

More information: Sophia Davidson et al. IFN λ is a potent anti-influenza therapeutic without the inflammatory side effects of IFN α treatment, *EMBO Molecular Medicine* (2016). [DOI: 10.15252/emmm.201606413](https://doi.org/10.15252/emmm.201606413)

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