

Researchers identify protein that could reduce death, improve symptoms in flu and other infections

September 29 2017



Credit: CC0 Public Domain

A new study by researchers at the University of Maryland School of

Medicine has identified an innovative strategy for treating influenza, and perhaps other infectious diseases as well. Scientists showed that a small protein called retrocyclin-101 (RC-101) could potentially improve the symptoms and mortality associated with the flu and possibly other types of infectious illness as well.

The protein is unique in that it not only targets the flu virus itself, but also the harmful inflammation the virus triggers in the host.

While the effect of RC-101 has been studied as a flu treatment in cells before, it has never been studied in animals. The research appears in the most recent issue of the *Journal of Leukocyte Biology*.

"Every year, thousands of people across the country die from the flu or its complications—despite widespread use of annual influenza vaccines," said the study's lead author, Daniel J. Prantner, a research associate in the Department of Microbiology and Immunology at the University of Maryland School of Medicine (UM SOM). "We think that this protein could lead to medicines that could be a powerful tool in the battle against this disease, and against inflammation in general."

For this study, Dr. Prantner and his colleagues studied the effects of RC-101 on human cells, and in an animal model of flu, using mice. The researchers studied human immune cells, and found that RC-101 had two positive effects. First, it blocked the flu virus from infecting the cells; second it blocked the runaway inflammation that is behind most symptoms of influenza infection, such as fever, pain, lethargy, and trouble breathing. This double action is unique, Dr. Prantner says.

In the animal model, the researchers infected two groups of mice with a dose of influenza that is typically lethal. They gave one of these groups RC-101 two days after infection for a total of five days, and gave the other group a placebo. The mice that were treated with RC-101

exhibited less severe symptoms of the flu and also decreased rates of death. Among the control group, 90 percent of the mice died; among the group that was given RC-101, only 20 percent died.

Although RC-101 does not exist in humans, it does exist in some other animals, including orangutans, and provides powerful antiviral protection. It appears to have been lost over the course of recent primate evolution. Chimpanzees and gorillas, for example, do not have it.

One of the study's principal investigators, Alfredo Garzino-Demo, PhD, an associate professor in the UM SOM Department of Microbiology and Immunology and at the UM SOM Institute of Human Virology, is planning research to see whether the protein can be effective against Dengue, Zika, and other viral infections that can cause damage via inflammation.

More information: Daniel Prantner et al, The θ -defensin retrocyclin 101 inhibits TLR4- and TLR2-dependent signaling and protects mice against influenza infection, *Journal of Leukocyte Biology* (2017). [DOI: 10.1189/jlb.2A1215-567RR](https://doi.org/10.1189/jlb.2A1215-567RR)

Provided by University of Maryland School of Medicine

Citation: Researchers identify protein that could reduce death, improve symptoms in flu and other infections (2017, September 29) retrieved 6 May 2024 from <https://medicalxpress.com/news/2017-09-protein-symptoms-mortality-flu.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.