

# Scientists discover influenza's Achilles heel: Antioxidants

October 29 2009

---

As the nation copes with a shortage of vaccines for H1N1 influenza, a team of Alabama researchers have raised hopes that they have found an Achilles' heel for all strains of the flu—antioxidants. In an article appearing in the November 2009 print issue of the *FASEB Journal* they show that antioxidants—the same substances found in plant-based foods—might hold the key in preventing the flu virus from wreaking havoc on our lungs.

"The recent outbreak of H1N1 influenza and the rapid spread of this strain across the world highlights the need to better understand how this virus damages the lungs and to find new treatments," said Sadis Matalon, co-author of the study. "Additionally, our research shows that antioxidants may prove beneficial in the treatment of flu."

Matalon and colleagues showed that the [flu virus](#) damages our lungs through its "M2 [protein](#)," which attacks the cells that line the inner surfaces of our lungs (epithelial cells). Specifically, the M2 protein disrupts lung epithelial cells' ability to remove liquid from inside of our lungs, setting the stage for [pneumonia](#) and other lung problems. The researchers made this discovery by conducting three sets of experiments using the M2 protein and the lung protein they damage. First, frog eggs were injected with the lung protein alone to measure its function.

Second, researchers injected frog eggs with both the M2 protein and the lung protein and found that the function of the lung protein was significantly decreased. Using molecular biology techniques, scientists

isolated the segment of the M2 protein responsible for the damage to the lung protein. Then they demonstrated that without this segment, the protein was unable to cause damage.

Third, the full M2 protein (with the "offending" segment intact) and the lung protein were then re-injected into the frog eggs along with drugs known to remove oxidants. This too prevented the M2 protein from causing damage to the [lung](#) protein. These experiments were repeated using cells from human lungs with exactly the same results.

"Although vaccines will remain the first line of intervention against the [flu](#) for a long time to come, this study opens the door for entirely new treatments geared toward stopping the virus after you're sick," said Gerald Weissmann, M.D., Editor-in-Chief of the [FASEB Journal](#), "and as Thanksgiving approaches, this discovery is another reason to drink red wine to your health."

More information: Ahmed Lazrak, Karen E. Iles, Gang Liu, Diana L. Noah, James W. Noah, and Sadis Matalon. [Influenza](#) virus M2 protein inhibits epithelial sodium channels by increasing reactive oxygen species. *FASEB J.* [doi:10.1096/fj.09-135590](https://doi.org/10.1096/fj.09-135590)

Source: Federation of American Societies for Experimental Biology ([news](#) : [web](#))

Citation: Scientists discover influenza's Achilles heel: Antioxidants (2009, October 29) retrieved 27 April 2024 from <https://phys.org/news/2009-10-scientists-influenza-achilles-heel-antioxidants.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.