

Omega 3 fatty acids may reduce bacterial lung infections associated with COPD

March 16 2016, by Suzanne Pallo



Compounds derived from omega-3 fatty acids – like those found in salmon – might be the key to helping the body combat lung infections, according to researchers at the University of Rochester School of Medicine and Dentistry.

The omega-3 derivatives were effective at clearing a type of bacteria called Nontypeable Haemophilus influenzae (NTHi), which often plagues people with inflammatory diseases like chronic [obstructive pulmonary disease](#) (COPD).

[COPD](#), which is most often caused by years of smoking, is characterized

by inflammation and excessive mucus in the lungs that blocks airflow. Quitting can slow the progress of COPD, but it doesn't halt the disease. Anti-inflammatory drugs are the most common treatment, however they suppress the immune system, which can put people with COPD at risk for secondary infections, most commonly NTHi bacterial infections.

"Our biggest concern with patients who have COPD is bacterial infections, which often put their lives at risk," says Richard Phipps, Ph.D. professor of Environmental Medicine and director of the URSMD Lung Biology and Disease Program. "If we can figure out how to predict who is likely to get an infection, physicians could put them on a preventative medication."

In his recent study, which was featured in the top ten percent of the March 15 issue of the *Journal of Immunology*, Phipps and lead author, Amanda Croasdell, a graduate student in the Toxicology program, tested the effectiveness of an inhalable omega-3 derivative to prevent NTHi lung infections in mice.

Omega-3 [fatty acids](#), which are abundant in fish like sardines and salmon, are touted for their many health benefits. These superstars of the diet world are normally broken down to form molecules that help turn off inflammation after an infection or injury.

"We never really knew why diets high in [omega fatty acids](#) seemed good, but now we know it's because they provide the precursors for molecules that help shut down excessive inflammation." says Phipps.

Doctors used to believe that shutting down inflammation only required removing whatever caused it, for example pulling a thorn from your finger or, in this case, getting rid of bacteria. While that might work some of the time, we now know that shutting down inflammation is an active process that requires a certain class of anti-inflammatory

molecules.

Unlike other [anti-inflammatory drugs](#), the specialized agent used in this study reduced inflammation in the lungs of mice without suppressing the ability to clear the bacteria. In fact, it could actually hasten the process of clearing bacteria. Phipps and his colleagues believe they are the first to show that this special compound can improve lung function in the face of live bacteria.

While these results are encouraging, further study is needed to understand how these compounds can be used in humans. A similar compound in the form of an eye drop solution was recently tested in a clinical trial for [dry eye syndrome](#) and was well tolerated.

If found to be effective in humans, the agent used in this study might have the potential to improve the lives of the millions of people around the world who suffer from COPD, and might also be used to treat ear infections, bronchitis, and pneumonia, which are also caused by NTHi.

Provided by University of Rochester Medical Center

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