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Omega-3 Fatty Acids

More critical for your health than we thought

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A significant new study—the first of its kind—shows that the nutrients found in walnuts, seeds, and certain types of seafood can reduce inflammation and improve declining lung function. Salmon is one of the richest sources of omega-3 fatty acids. Other marine sources include tuna, mackerel, sardines, and herring.

When hospitals were filled beyond capacity and bed ventilators were in short supply during the pandemic, many people got a glimpse of how devastating lung diseases can be.

Unfortunately, lung function is not only harmed by respiratory illnesses like COVID-19, but also declines with age. Swelling or inflammation caused by disease, environmental exposures, or advanced age can also partially obstruct breathing passages and limit airflow, shows. Now, a new study, shows how consuming nutrients called omega-3 fatty acids can reduce such inflammation and slow declining lung function. The report was published in the *American Journal of Respiratory and Critical Care Medicine*

"It has already been proven that omega-3 fatty acids can help prevent cardiovascular disease, but the effects of omega-3s on other chronic conditions was unknown until this study," says Ana Zamora-Martinez, a pulmonologist at Mayo Clinic in Arizona, who was not involved in the study. She calls its findings "significant" because it's "the first study that shows the importance of omega-3 fatty acids in keeping the lungs healthy."

The importance of omega-3s in the body

Omega-3 fatty acids, also called omega-3s, are a class of fatty acids defined by their chemical structure. They are among the healthy fats known for providing the body with energy, and have been linked to better heart and brain health, a stronger immune system, lower blood pressure, and improved hormone levels, according to the National Institutes of Health Office of Dietary Supplements.

The three main omega-3s are alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA).

"It's important to know that each omega-3 is different both chemically and physiologically," explains Jill Weisenberger, a Virginia-based registered dietician and author of "Prediabetes: A Complete Guide." Because our bodies can't produce omega-3s, it's necessary to get them as part of a balanced diet or through supplementation.

Good food sources of ALA fatty acids are land-based plant oils found in walnuts, seeds, enriched eggs, soybeans, and canola oils. DHA and EPA fatty acids are found in marine sources including salmon, tuna, mackerel, sardines, and herring. "Other seafood contains omega-3 fatty acids, but in much lower amounts," says Weisenberger.

Both land and water omega-3s are important, but Uma Naidoo, a physician and director of nutritional and lifestyle psychiatry at Massachusetts General Hospital, says the marine-based fatty acids are more important. And she says vegetarians or people who don't like fish need not fret because one can still obtain these omega-3s through algae-derived supplements or fish oil. "Interestingly, the fish we depend on for those essential nutrients don't make EPA or DHA themselves but get it from the algae they eat, which you can eat as well," she says.

Obtaining those nutrients, one way or another, is vital—especially because most people aren't getting nearly enough. The American Heart Association (AHA) recommends eating two servings of fish per week to do so, but in one report, calls Americans' intake of omega-3s "abysmally low."

First study of its kind

The AHA suggests including omega-3s in one's diet to "reduce heart disease and stroke risk," but the new *American Journal* study shows why omega-3s are also important for our lungs—which supply the body with oxygen and remove waste gasses like carbon dioxide, plus play a vital role in immune health.

Past studies, including a 2022 analysis on why some ethnic groups suffer worse lung disease outcomes than others, and pooled research that provides important data on chronic lower respiratory diseases, have measured lung health in people before. Other studies have even looked at how omega-3s affect inflammation generally, with research showing that omega-3s may reduce bacterial lung infections.

Until now, however, robust research showing the association between omega-3s' anti-inflammatory properties and improved lung health has been lacking.

How omega-3s improve lung health

In the new study, the researchers demonstrated the association between omega-3s' anti-inflammatory properties and improved lung health in two ways. First, they analyzed blood sample data of more than 15,000 Americans whose well-being had been tracked for an average of seven years (though many participants were tracked for up to 20 years). Such participants were racially diverse, had an average age of 56, and skewed slightly female. By measuring blood samples from all participants, the researchers were able to identify a connection between omega-3s and declining lung function related to age, says Bonnie Patchen, a nutritionist and researcher at Cornell University and one of the study's authors.

To corroborate their findings, the team also analyzed genetic data from the United Kingdom Biobank of more than 500,000 Europeans. By studying certain genetic markers in the blood samples of that group as well, the researchers "found that higher levels of omega-3 fatty acids were protective for lung health," says James P. Kiley, director of the National Heart, Lung, and Blood Institute's Division of Lung Diseases.

"The dual approach we took is a way of adding rigor to the findings," adds Patricia Ann Cassano, director of the Division of Nutritional Sciences at Cornell University and a coauthor of the study.

The results from both analyses show a clear correlation not previously established. "This study provides the strongest evidence to date of an association between omega-3 fatty acids and lung health and underscores the importance of including omega-3 fatty acids in one's diet," says Patchen.

More broadly, the study also suggests that other foods with anti-inflammatory properties— tomatoes, vegetables like spinach and kale, some nuts, and fruits such as strawberries, cherries, and blueberries—may also be helpful in maintaining lung health.

More research on the horizon

Despite its strengths, the *American Journal* study only involved healthy adults and didn't include all groups, Patchen says. So, the team is working to evaluate omega-3 blood levels of unhealthy individuals as well, including heavy smokers and people with chronic obstructive pulmonary disease (COPD) to see if the same associations seen in the current study hold true, she says.