Omega-3 fatty acids appear promising for maintaining lung health

July 20 2023

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Omega-3 fatty acids, which are abundant in fish and fish oil supplements, appear promising for maintaining lung health, according to new evidence from a large, multi-faceted study in healthy adults

supported by the National Institutes of Health.

The study provides the strongest evidence to date of this association and underscores the importance of including omega-3 fatty acids in the diet, especially given that many Americans do not meet current guidelines. The study results were published in the *American Journal of Respiratory and Critical Care Medicine*.

"We know a lot about the role of diet in cancer and cardiovascular diseases, but the role of diet in chronic lung disease is somewhat understudied," said corresponding author Patricia A. Cassano, Ph.D., director of the Division of Nutritional Sciences at Cornell University in Ithaca, New York. "This study adds to growing evidence that omega-3 fatty acids, which are part of a healthy diet, may be important for lung health too."

There's increased interest in trying to understand whether nutritional interventions could contribute to lung disease prevention efforts. Past studies have suggested that omega-3 fatty acids may help, due largely to their established anti-inflammatory actions. However, robust studies of this association have been lacking, until now.

To learn more, researchers developed a two-part study investigating the link between omega-3 fatty acid levels in the blood and lung function over time. In the first part, the researchers conducted a longitudinal, observational study involving 15,063 Americans from the NHLBI Pooled Cohorts Study—a large collection of NIH-funded studies that helps researchers to study determinants of personalized risk for chronic lung disease.

The participants studied were generally healthy when the study began, and the majority had no evidence of chronic lung disease. They comprised a racially diverse group of adults, with an average age of 56

years, and 55% were female. The researchers followed participants for an average of seven years and up to 20 years.

The longitudinal study showed that higher levels of omega-3 fatty acids in a person's blood were associated with a reduced rate of lung function decline. The researchers observed the strongest associations for docosahexaenoic acid (DHA), an omega-3 fatty acid that is found at high levels in fatty fish such as salmon, tuna, and sardines. DHA is also available as a dietary supplement.

In the second part, the researchers analyzed genetic data from a large study of European patients (more than 500,000 participants) from the UK Biobank. They studied certain genetic markers in the blood as an indirect measure, or proxy, for dietary omega-3 fatty acid levels to see how they correlated with lung health. The results showed that higher levels of omega-3 fatty acids—including DHA—were associated with better lung function.

One caveat of the current study is that it only included healthy adults. As part of this ongoing project, researchers are collaborating with the COPDGene study to examine blood levels of omega-3 fatty acids in relation to the rate of decline in lung function among people with chronic obstructive pulmonary disease or COPD—including heavy smokers—to determine if the same beneficial associations are found.

"We're starting to turn a corner in nutritional research and really moving toward precision nutrition for treating lung diseases," said study first author Bonnie K. Patchen, Ph.D., a nutritionist and member of Cassano's research team at Cornell. "In the future, this could translate into individualized dietary recommendations for people at high risk for chronic lung disease."

For now, the researchers point out that the U.S. Department of

Agriculture's Dietary Guidelines for Americans recommends that people eat at least two servings of fish per week, which most Americans fall far short. In addition to fish and fish oil, other sources of omega-3 fatty acids include nuts and seeds, plant oils, and fortified foods.

"This large population-based study suggests that nutrients with anti-inflammatory properties may help to maintain lung health," said James P. Kiley, Ph.D., director of the NHLBI's Division of Lung Diseases. "More research is needed, since these findings raise interesting questions for future prospective studies about the link between omega-3 fatty acids and lung function."

More information: Bonnie K. Patchen et al, Investigating Associations of Omega-3 Fatty Acids, Lung Function Decline, and Airway Obstruction, *American Journal of Respiratory and Critical Care Medicine* (2023). DOI: 10.1164/rccm.202301-0074OC

Provided by National Institutes of Health