

## Excess omega-3 fatty acids could lead to negative health effects

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A new review suggests that omega-3 fatty acids taken in excess could have unintended health consequences in certain situations, and that dietary standards based on the best available evidence need to be established.

"What looked like a slam dunk a few years ago may not be as clear cut as we thought," said Norman Hord, associate professor in OSU's College of Public Health and Human Sciences and a coauthor on the paper.

"We are seeing the potential for negative effects at really high levels of omega-3 fatty acid consumption. Because we lack valid biomarkers for exposure and knowledge of who might be at risk if consuming excessive amounts, it isn't possible to determine an upper limit at this time."

Previous research led by Michigan State University's Jenifer Fenton and her collaborators found that feeding mice large amounts of dietary omega-3 [fatty acids](#) led to increased risk of colitis and immune alteration. Those results were published in *Cancer Research* in 2010.

As a follow-up, published online in the journal *Prostaglandins, Leukotrienes & Essential Fatty Acids*, Fenton and her co-authors, including Hord, reviewed the literature and discuss the potential adverse health outcomes that could result from excess consumption of [omega-3 fatty acids](#).

Studies have shown that omega-3s, also known as long chain

[polyunsaturated fatty acids](#) (LCPUFAs), are associated with lower risk of sudden cardiac death and other cardiovascular disease outcomes.

"We were inspired to review the literature based on our findings after recent publications showed increased risk of advanced prostate cancer and atrial fibrillation in those with high blood levels of LCPUFAs," Fenton said.

Omega-3 fatty acids have anti-inflammatory properties, which is one of the reasons they can be beneficial to heart health and inflammatory issues. However, the researchers said excess amounts of omega-3 fatty acids can alter immune function sometimes in ways that may lead to a dysfunctional immune response to a viral or bacterial infection.

"The dysfunctional immune response to excessive omega-3 fatty acid consumption can affect the body's ability to fight microbial pathogens, like bacteria," Hord said.

Generally, the researchers point out that the amounts of fish oil used in most studies are typically above what one could consume from foods or usual dosage of a dietary supplement. However, an increasing amount of products, such as eggs, bread, butters, oils and orange juice, are being "fortified" with omega-3s. Hord said this fortified food, coupled with fish oil supplement use, increases the potential for consuming these high levels.

"Overall, we support the dietary recommendations from the American Heart Association to eat fish, particularly fatty fish like salmon, mackerel, lake trout or sardines, at least two times a week, and for those at risk of coronary artery disease to talk to their doctor about supplements," he said.

"Our main concern here is the hyper-supplemented individual, who may

be taking high-dose omega-3 supplements and eating four to five omega-3-enriched foods per day," Hord added. "This could potentially get someone to an excessive amount. As our paper indicates, there may be subgroups of those who may be at risk from consuming excess amounts of these fatty acids."

Hord said there are no evidence-based standards for omega-3 intake and no way to tell who might be at health risk if they consume too high a level of these fatty acids.

"We're not against using fish oil supplements appropriately, but there is a potential for risk," Hord said. "As is all true with any nutrient, taking too much can have negative effects. We need to establish clear biomarkers through clinical trials. This is necessary in order for us to know who is eating adequate amounts of these nutrients and who may be deficient or eating too much.

"Until we establish valid biomarkers of omega-3 exposure, making good evidence-based dietary recommendations across potential dietary exposure ranges will not be possible."

Provided by Oregon State University

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