

High percentage of omega-3s in the blood may boost risk of aggressive prostate cancer

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The largest study ever to examine the association of dietary fats and prostate cancer risk has found what's good for the heart may not be good for the prostate.

Analyzing data from a nationwide study involving more than 3,400 men, researchers at Fred Hutchinson Cancer Research Center found that men with the highest blood percentages of docosahexaenoic acid, or DHA, an inflammation-lowering omega-3 fatty acid commonly found in [fatty fish](#), have two-and-a-half-times the risk of developing aggressive, high-grade [prostate cancer](#) compared to men with the lowest DHA levels.

Conversely, the study also found that men with the highest blood ratios of trans-fatty acids – which are linked to [inflammation](#) and heart disease and abundant in processed foods that contain partially hydrogenated vegetable oils – had a 50 percent reduction in the risk of high-grade prostate cancer. In addition, neither of these fats was associated with the risk of low-grade prostate cancer risk. The researchers also found that omega-6 fatty acids, which are found in most vegetable oils and are linked to inflammation and heart disease, were not associated with prostate cancer risk. They also found that none of the fats were associated with the risk of low-grade prostate cancer.

These findings by Theodore M. Brasky, Ph.D., and colleagues in the Hutchinson Center's Public Health Sciences Division were published online April 25 in the *American Journal of Epidemiology*.

"We were stunned to see these results and we spent a lot of time making sure the analyses were correct," said Brasky, a postdoctoral research fellow in the Hutchinson Center's Cancer Prevention Program. "Our findings turn what we know – or rather what we think we know – about diet, inflammation and the development of prostate cancer on its head and shine a light on the complexity of studying the association between nutrition and the risk of various chronic diseases."

The researchers undertook the study because chronic inflammation is known to increase the risk of several cancers, and the omega-3 fatty acids found primarily in fish and fish oil supplements have anti-inflammatory effects. In contrast, other fats, such as the omega-6 fats in vegetable oil and trans-fats found in fast foods, may promote inflammation. "We wanted to test the hypothesis that the concentrations of these fats in blood would be associated with prostate cancer risk," Brasky said. "Specifically, we thought that omega-3 fatty acids would reduce and omega-6 and trans-fatty acids would increase prostate cancer risk."

The mechanisms behind the impact of omega-3s on risk of high-grade prostate cancer are unknown. "Besides inflammation, omega-3 fats affect other biologic processes. It may be that these mechanisms play a greater role in the development of certain prostate cancers," Brasky said. "This is certainly an area that needs more research."

Currently there is no official recommended daily allowance for omega-3 fats for adults or children, although many nutrition experts and physicians recommend 450 milligrams of omega-3 DHA per day as part of a healthy diet.

The study was based on data from the Prostate Cancer Prevention Trial, a nationwide randomized clinical trial that tested the efficacy of the drug finasteride to prevent prostate cancer. While the trial involved nearly

19,000 men age 55 and older, the data in this analysis came from a subset of more than 3,000 of the study participants, half of whom developed prostate cancer during the course of the study and half of whom did not. The clinical trial was unique in that prostate biopsy was used to confirm the presence or absence of prostate cancer in all study participants.

Among the study participants, very few took fish oil supplements – the most common non-food source of [omega-3 fatty acids](#), which are known to prevent heart disease and other inflammatory conditions. The majority got omega 3s from eating fish.

So based on these findings, should men concerned about heart disease eschew fish oil supplements or grilled salmon in the interest of reducing their risk of aggressive prostate cancer? Brasky and colleagues don't think so.

"Overall, the beneficial effects of eating fish to prevent heart disease outweigh any harm related to prostate cancer risk," Brasky said. "What this study shows is the complexity of nutrition and its impact on disease risk, and that we should study such associations rigorously rather than make assumptions," Brasky said.

Provided by Fred Hutchinson Cancer Research Center

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