

## Fish Oil & Prostate Cancer

### Scare

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**Bottom line at the top: This poorly designed study doesn't prove anything. Other studies suggest that the issue is complex and that eating non-smoked, non-salt-cured fish probably protects against prostate cancer. The jury is still out about fish oil supplements.**

Another media scare, this time about fish oil possibly causing prostate cancer, was based on a single study with dubious quality and significance. This study was an offshoot of another study, which was unrelated to fish oil.

The original study, performed at the Fred Hutchinson Cancer Research Center in Seattle, followed 35,533 men to see if selenium or vitamin E affected prostate cancer incidence. It wasn't designed to test fish oil. They prescribed no supplements and gave no dietary advice concerning fish.

Prior to taking any vitamin E or selenium, the men had blood fatty acid levels measured on a single occasion. At the end of the trial, which showed no impact of vitamin E or selenium on prostate cancer, the investigators looked at the fatty acid data.

They compared fatty acid levels in the 834 men who developed prostate cancer with the levels in a subgroup of 1,393 other men from the trial, selected to be similar to the men with cancer. They found that the ones with cancer had higher long chain omega-3-fatty acid levels ( $\omega$ 3LCFA). The highest levels correlated to the highest grade of cancer.

The first thing that doesn't make sense in this research is the study design. Fatty acids in red blood cells stick around for a long time and might reflect chronic fish or supplement consumption, but

they didn't measure fatty acids in cells. They measured plasma fatty acids, which disappear within hours of a meal. A single measurement doesn't tell us if that number is typical for the person or a fluke.

The research group gathered NO information about dietary habits or supplement use, so we don't know if the two groups were similar in that regard or not. We don't know if the men took supplements, regularly ate a lot of fish, or just came back from Japan. We don't know if their supplements or dietary fish had contaminants (as many do) or didn't. Contaminants can sometimes cause cancer that gets blamed on the primary ingredient.

The second thing that doesn't make sense is the data. High grade cancer increased by 71%, low grade increased by 44%, but all types only increased by 43%. The math doesn't add up, unless intermediate grade cancers were non-existent. The same research group in the past has found that low and high  $\omega$ 3LCFA levels increased prostate cancer risk, but intermediate levels reduced risk. Numbers like these are crazy-making and defy logic.

The third iffy issue is that the two groups' fatty acid blood levels differed only by 0.18%. The  $\omega$ 3LCFAs were 4.66% of the fatty acids in the men with prostate cancer and 4.48% in men without. Given that small difference, the fact that fatty acid levels change quickly with recent intake, and they only measured levels once, the investigators are stretching it to tell men that fish oil causes cancer.

We also don't know whether the men with and without cancer had different risk factors at the start, or if men who felt they had increased risk tried to reduce the odds by eating more fish. After all, even

a cursory internet search for a cancer-reduction lifestyle yields consistent advice for a diet rich in fish, vegetables, fruits, whole grains and tomatoes.

The authors' conclusion pretty much ignores the confusing results of other studies, ones that actually tested fish intake or fish oil supplements. I describe some of these below, and don't be upset if they sound contradictory. They are contradictory, proving that we just don't know all of the variables that may or may not relate fish oil to cancer.

In test tubes, DHA (one of the  $\omega$ 3LCFAs), together with Celebrex tablets, halts prostate cancer cell growth. DHA alone doesn't halt growth, but reduces prostate cancer cell survival. In mice prone to prostate cancer, fish oil supplements reduce the risk of cancer and decreased the size of tumors in those that did develop.

In humans, most of the studies involved dietary fish. Americans who eat a Mediterranean diet rich in fish have somewhat reduced prostate cancer incidence. But men in Delhi, India who consume fish have a somewhat higher prostate cancer incidence.

A Harvard study of 47,882 men followed for twelve years linked eating fish more than three times a week to reduced prostate cancer, especially the aggressive, spreading type. Studies in Sweden, Japan and Brazil affirm that men eating fish have one-half to one-third the prostate cancer risk, compared to men who eat none.

An Iceland study of 2218 elderly men identified a complex relationship: Salted or smoked fish consumption earlier in life was associated with more advanced cancer, other types of fish showed no relationship, and men who took fish oil supplements later in life had a reduced risk of advanced prostate cancer.

A pooled analysis of a number of studies suggested that high levels of DHA (from diet or supplements) reduces prostate cancer risk, but high levels of EPA + DHA increase the risk of high grade cancer.

After acquiring prostate cancer, men who underwent prostatectomy had less tumor growth if they took 5 grams of fish oil daily.

In the absence of definitive data and a plausible mechanism, it sounds like men at risk for prostate cancer should eat fish, but perhaps not salt- or smoke-cured fish. Purified supplements (not just fish liver oil) are probably OK, especially if you have a reason to take them (see the Fish Oil article in the March 2009 DrG'sMediSense newsletter at [March 2009 HCMB Newsletter](#)).

To choose non-endangered fish with lower mercury content check the list at [www.nrdc.org/health/effects/mercury/guide.asp](http://www.nrdc.org/health/effects/mercury/guide.asp).

#### Selected References:

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