Aggressive Prostate Cancer: High Blood Levels of Omega-3s Doubled the Risk, but High Levels of Trans–Fatty Acids Cut Risk in Half

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By Anne Landry [1]

An analysis of data from 3,400 men in the large nationwide Prostate Cancer Prevention Trial indicates that, contrary to what might be expected, men with the highest blood percentages of DHA (docosahexaenoic acid), an omega-3 fatty acid commonly found in fatty fish, had 2.5 times the risk of developing aggressive, high-grade prostate cancer, compared with men who had the lowest levels.

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Docosahexaenoic acid (DHA), is a systematic name. Docosa refers to the 22 carbon atoms in the chain and hexa refers to 6 double bonds.

In another surprising finding, the investigators discovered that men with the highest blood ratios of trans–fatty acids, commonly found in processed foods containing partially hydrogenated vegetable oils, actually had a 50% reduction in the risk of aggressive prostate cancer. Neither omega 3s nor trans–fatty acids were associated with a risk of low-grade prostate cancer, and omega-6 fatty acids, found in most vegetable oils and associated with inflammation and heart disease, were not associated with prostate cancer risk, the researchers reported.

The Prostate Cancer Prevention Trial and Subset Analysis

The Prostate Cancer Prevention Trial, a randomized clinical trial conducted across the US that tested efficacy of the androgen inhibitor finasteride in preventing prostate cancer, involved nearly 19,000 men 55 years of age and older. Data in the analysis reported in the American Journal of Epidemiology by Brasky et al are from a subset of about 3,400 of the participants in the larger trial, half of whom developed prostate cancer (confirmed by biopsy) during the course of the study and half of whom did not.

The study authors are from Fred Hutchinson Cancer Research Center (FHCRC), The University of Texas Health Science Center at San Antonio, and the National Cancer Institute, which funded the research. The findings were published online on April 25 in the American Journal of Epidemiology. Given the association between chronic inflammation and increased cancer risk, together with the cardiac benefits and anti-inflammatory effects of omega-3 fatty acids and the possible inflammation-promoting effects of omega-6 fats and trans-fats, the findings seem to be counterintuitive. “Specifically, we thought that omega-3 fatty acids would reduce and omega-6 and trans–fatty acids would increase prostate cancer risk,” commented lead author Theodore M. Brasky, PhD, a postdoctoral research fellow in the Cancer Prevention Program at FHCRC.

While the mechanisms by which omega-3s might increase the risk of high-grade prostate cancer are
unknown, Dr. Brasky emphasized that omega-3 fats have effects on other biologic processes, some of which may have an impact on the development of certain prostate cancers, and much more research is needed before definitive conclusions can be drawn from the study findings. It is also premature to recommend that men (the majority of whom in the study got their omega 3s from eating fish, not from supplements) change their diets in any way. “Overall, the beneficial effects of eating fish to prevent heart disease outweigh any harm related to prostate cancer risk,” Dr. 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.”

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