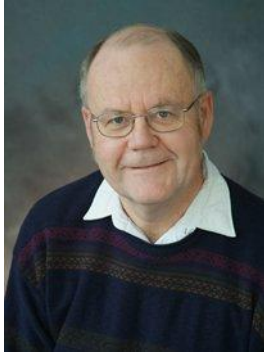


**A Brief Response to Recent Paper on Omega-3
Fatty Acids and Prostate Cancer Risk**



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**Expert Commentary:
A brief response to recent paper on omega-3 fatty acids and prostate cancer risk**

By: Dr. Bruce J. Holub, Ph.D., Professor Emeritus, University of Guelph

Brasky et al. (in press, J. of the National Cancer Institute [2013]) have reported on the relationship between higher blood levels of omega-3 fatty acids and the risk of prostate cancer.

This was a 'case-cohort' study from the US wherein the blood levels of long-chain omega-3 fatty acids (EPA-eicosapentaenoic acid, DPA-docosapentaenoic acid, DHA-docosahexaenoic acid) were measured in men aged 50 and over who were confirmed to have prostate cancer and those (controls) who were free of prostate cancer. The authors reported a positive relationship/trend based on statistical analyses between higher levels of long-chain omega-3 fatty acids (the sum of EPA/DPA/DHA omega-3 fatty acids) in the blood biomarker (omega-3 levels in blood plasma phospholipid) and total prostate cancer. They reported a significant positive relationship between higher blood levels of DHA and prostate cancer risk but no statistically-significant trend was found in the case of EPA. The authors concluded that 'Recommendations to increase long-chain omega-3 PUFA intake should consider its potential risks'.

The following brief commentary is offered at this time:

It is noteworthy that this study did not evaluate the intake of long-chain omega-3 fatty acids to the risk of prostate cancer. The levels of EPA/DPA/DHA in the circulation are influenced by the metabolism of these fatty acids which differ between individuals including the metabolic conversion of dietary LNA (alpha-linolenic acid, the short-chain and major omega-3 fatty acid in the North American diet, representing 90% of the total omega-3 intake) to these long-chain omega-3 fatty acids. The blood levels of EPA/DPA/DHA also reflect the dietary intakes of these fatty acids (particularly EPA and DHA) from dietary sources (mainly

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fish/seafood) plus other foods (including food enriched in EPA/DHA) plus supplements (nutraceuticals) containing EPA/DHA. Numerous lifestyle factors such as smoking have also been associated with differing blood levels of omega-3 fatty acids in the blood. Thus, this study does not allow for any direct connection of the higher blood levels of EPA/DPA/DHA combined, as associated with a moderately higher risk of prostate cancer (as reported in this paper), to a specific source such as dietary intake of total fish /seafood, specific types of fish/seafood, preparation of such (e.g., salted, pickled) other food sources, fish oil supplements, other influencing factors. Thus, a quote from the research team in a recent widespread release that efforts to increase long-chain omega-3 fatty acid intakes should consider the potential risks is premature without directly assessing omega-3 intakes (via diet, fish/seafood, other foods enriched in EPA/DHA , fish oil supplementation) in relation to the risk of prostate cancer – which, these researchers did not do.

The topic of dietary intake of fish and EPA/DHA prostate cancer was reviewed by MacLean et al. (J. Am. Medical Assoc., 295: 403-415 (2006)). In the 4 studies as reviewed directed to fish consumption, 1 demonstrated a favourable effect, 1 showed a trend for a favourable effect, and 2 did not find an association. This review also reported on no significant association with the incidence of prostate cancer with marine omega-3 fats, EPA, or DHA consumption. It is of interest to note that the present authors (who submitted their revised article on May 24, 2013) did not include reference to the publication by

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Torfadottir et al. in April of 2013 in Plos One (8(4): e59799)). These latter researchers reported upon finding no association between overall fish consumption in early or midlife and prostate cancer risk. However, there was some evidence that ‘salted’ or ‘smoked’ fish may increase the risk of advanced prostate cancer. Interestingly, men consuming fish oil in later life had a lower risk of advanced prostate cancer and no association was found for early life or midlife consumption. They concluded that fish oil consumption may be protective against the progression of prostate cancer in elderly men.

It is important to emphasize that Mozaffarian et al. have recently published their findings from a major population study relating the levels of the summed and individual levels of long-chain omega-3 fatty acids in older US adults to all-cause mortality. The study reported a highly significant trend for total and individual long-chain omega-3 fatty acids such that higher blood levels were associated with less mortality.

Finally, it is important to emphasize that Mozaffarian et al. have recently published on April 2, 2013 (Ann. Intern. Med., 158: 515-525 (2013)) their findings from a major population study relating the levels of the summed and individual levels of long-chain omega-3 fatty acids in older US adults to all-cause mortality. Interestingly, the same biomarker (omega-3 fatty acids in blood plasma phospholipid) was used in the study by Mozaffarian et al. as used in the study by Brasky et al. Also, the distributions of long-chain omega-3 levels across the subject sub-groups (quintiles/quartiles) were generally quite similar. The study by Mozaffarian et al. (2013) reported a highly significant trend for total and individual long-chain omega-3 fatty acids such that higher blood levels were associated with less mortality. Individuals with higher levels of total omega-3 had a 27% lower risk while higher levels of EPA and DHA were associated with 17% and 20% less total all-cause mortality.