

Fish oil supplementation may slow prostate cancer growth

By Nathan Gray, 27-Oct-2011

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A low-fat diet supplemented with fish oil pills may slow the growth of prostate cancer cells human prostate cancer tissue compared to a traditional high-fat Western diet, according to new research.

The study, reported in *Cancer Prevention Research*, gave a group of 48 men undergoing radical prostatectomy (an operation to remove the prostate gland and some of the tissue around it) were randomly assigned to receive a low-fat diet with 5 grams of fish oil daily – dietary omega-6:omega-3 ratio of 2:1 – or a control Western diet – omega-6:omega-3 ratio of 15:1 – for between four and six weeks prior to the operation.

The researchers, from UCLA's Jonsson Comprehensive Cancer Center, USA, reported that the growth of prostate cancer cells was slowed. The short-term study also found men given the fish oil supplement had alter cell membrane composition of both the healthy and cancer cells in the prostate.

"The finding that the low-fat, fish oil diet reduced the number of rapidly dividing cells in the prostate cancer tissue is important because the rate at which the cells are dividing can be predictive of future cancer progression," said Dr. William Aronson, first author of the study.

"The lower the rate of proliferation, the lesser the chances that the cancer will spread outside the prostate, where it is much harder to treat," he explained.

Aronson said the changes in cell membrane structure – an increased level of omega-3 and decreased levels of omega-6 – could directly affect the biology and functioning of the cells, though admitted that further studies are needed.

Study details

Aronson and his colleagues conducted a phase II randomized trial to investigate the effect of decreasing dietary fat and improving dietary omega-6:omega-3 ratio on biomarkers related to prostate cancer development and progression. The markers they monitored included changes in serum insulin-like growth factor I (IGF-1), prostate prostaglandin E2 levels, omega-6:omega-3 fatty acid ratios, and markers of cell growth and death.

The team reported that although serum markers of prostate cancer were unaltered, fish oil supplementation reduced benign and malignant prostate tissue omega-6:omega-3 ratios and was shown to reduce and slow cell growth (proliferation) *in vivo*. They also found that blood from patients receiving the fish oil slowed the growth of prostate cancer cells *in vitro* when compared to blood from men on the Western diet, which did not slow cancer growth.

Aronson said the study using proved that the changes prompted by what the men were eating were clearly evident in their prostate tissue – adding that the results showed that the fish oil 'treatment' was reaching the targeted organ.

"You truly are what you eat," said the UCLA researcher. *"We are extremely pleased about our findings, which suggest that by altering the diet, we may favourable affect the biology of prostate cancer."*

Moving forward

Aronson however cautioned that he could not recommend dietary changes based on this study because of its short duration and small sample size. Based on the research results he is organising a much larger study of 100 men with prostate cancers who have elected active surveillance – meaning they do not receive any active treatment for their disease but do get regular biopsies and check-ups.

He explained that the future study will randomly divide the men into a low-fat, fish oil supplement group and a traditional Western diet group and follow them for a year to evaluate the diet effects on cancer growth.

Source: *Cancer Prevention Research*

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"Phase II Prospective Randomized Trial of a Low-Fat Diet with Fish Oil Supplementation in Men Undergoing Radical

Prostatectomy"

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