

# Fish Oils and Breast/Prostate Cancer

## Summaries of the latest research concerning fish oils and breast/prostate cancer

### Fish oils help prevent prostate cancer

BETHESDA, MARYLAND. Alpha-linolenic acid (ALA) is a major component of flax seed oil and has been associated with significant cardiovascular benefits. Some studies, however, have shown that a high intake of ALA is associated with an increased risk of prostate cancer. A prestigious team of researchers from the National Cancer Institute, the Harvard Medical School, the Harvard School of Public Health, and the Karolinska Institutet in Stockholm has just released the results of a study aimed at settling the controversy as to whether or not ALA is detrimental when it comes to prostate cancer. The researchers also determined the effect of other fatty acids, including fish oils, on prostate cancer risk. The study involved 47,866 male American health professionals who were followed over a 14-year period beginning in 1986. The participants completed detailed food frequency questionnaires in 1986, 1990 and 1994. By the year 2000, 2965 new cases of prostate cancer had been reported with 448 of these being advanced (metastasized) or fatal. The overall incidence of new prostate cancer detected over the 14-year period was 0.5% per year. The researchers found no correlation between ALA intake and overall prostate cancer risk, but did observe a strong association between a high ALA intake and the risk of advanced prostate cancer. Men with a high ALA intake (greater than 0.58% of energy or about 1.3 grams/day) were twice as likely to develop advanced prostate cancer as were men with a lower intake (less than 0.37% of energy or about 0.8 grams/day) even after adjusting for all other known variables that could affect the risk. The risk was slightly higher for ALA from non-animal sources than for ALA from meat and dairy sources. There was a trend for red meat, mayonnaise and salad dressings to be associated with a higher risk. The intake of two other abundant fatty acids, linoleic acid and arachidonic acid, was not related to prostate cancer risk. The team of researchers found a protective effect associated with a high intake of fish oils - eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Men with a daily intake of more than 0.214% of daily energy (about 470 mg/day) were 11% less likely to develop prostate cancer than were men with an intake less than 0.057% of energy (about 125 mg/day). The beneficial effect of EPA plus DHA was particularly pronounced in regard to the incidence of advanced prostate cancer. Fish oil supplements were slightly less effective than fish oils from fatty fish perhaps indicating that vitamin D and vitamin A are necessary to obtain the maximum benefit. *Leitzmann, MF, et al. Dietary intake of n-3 and n-6 fatty acids and the risk of prostate cancer. American Journal of Clinical Nutrition, Vol. 80, July 2004, pp. 204-16/*

### Fats and breast cancer

MILAN, ITALY. The association between the intake of various fats and oils and the risk of breast cancer has been the subject of several studies. There is still no real consensus as to which fats are beneficial and which are not. The evidence for a protective role of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), the main components of fish oils, is probably the strongest. Researchers at the Italian National Cancer Institute have just completed an investigation aimed at clarifying the association between fat intake and breast cancer risk. A total of 4052 postmenopausal women were followed for an average of 5.5 years. During this time 71 cases of invasive breast cancer were diagnosed. The cancer patients were matched with 141 controls. All study participants had blood samples drawn and red blood cell (erythrocyte) membranes were analyzed for their fatty acid content. The researchers point out that erythrocyte membranes are good biomarkers for not only dietary fat intake, but also for other dietary and hormonal factors. Women with DHA concentrations in the highest tertile had less than half the

risk of breast cancer than did women in the lowest tertile. Polyunsaturated fatty acids overall were also protective with omega-3 acids being somewhat more protective than omega-6 acids. Saturated fatty acid concentrations were not significantly related to breast cancer risk. A higher concentration of monounsaturated fats, especially oleic acid, was associated with a significantly increased risk. The researchers point out that most oleic acid in mammalian tissue is derived from saturated stearic acid through a process involving the enzyme delta 9-desaturase. Saturated fatty acids, cholesterol, carbohydrates, insulin, testosterone, and estrogen all activate this enzyme whereas dietary polyunsaturated fatty acids and fasting deactivate it. The researchers conclude that the delta 9-desaturase enzyme may be an important link between breast cancer risk and dietary fat consumption and urge further research in the field. *Pala, Valeria, et al. Erythrocyte membrane fatty acids and subsequent breast cancer: a prospective Italian study. Journal of the National Cancer Institute, Vol. 93, July 18, 2001, pp. 1088-95/*

## **Fish consumption helps prevent prostate cancer**

STOCKHOLM, SWEDEN. Several studies have shown an inverse relationship between blood levels of fish oils (eicosapentaenoic acid [EPA] and docosahexaenoic acid [DHA]) and the risk of prostate cancer. A study just completed by medical researchers at the Karolinska Institute confirms this association. The Swedish study involved 3136 pairs of male twins born between 1886 and 1925. The participants completed food frequency questionnaires in 1961 and 1967 and were then followed up for 30 years. By December 31, 1997 the researchers had recorded 466 diagnoses of prostate cancer (340 fatal ones). The average age of diagnosis was 76.7 years. After adjusting for other known risk factors the researchers conclude that men who never eat fish have a two- to three-fold higher risk of prostate cancer than do men who eat moderate to high amounts. The researchers emphasize that only fatty fish such as salmon, herring and mackerel, which contain high amounts of omega-3 fatty acids (EPA and DHA), would be expected to be beneficial. *Terry, Paul, et al. Fatty fish consumption and risk of prostate cancer. The Lancet, Vol. 357, June 2, 2001, pp. 1764-66 (research letter)/*

## **Fish oils help prevent prostate cancer**

AUCKLAND, NEW ZEALAND. Medical researchers in New Zealand provide convincing evidence that an increased consumption of fish oils helps reduce the risk of developing prostate cancer. Their study involved 317 men who had been diagnosed with prostate cancer during 1996-97 and 480 age-matched controls. Blood samples were obtained from all participants and the erythrocyte (red blood cell) phosphatidylcholine fraction of the plasma was analyzed for EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), the two main components of fish oils. Evaluation of the collected data showed a clear correlation between blood level of EPA and DHA and the presence of prostate cancer. Study participants with levels in the highest quartile were found to have a 40 per cent lower incidence than participants with levels in the lowest quartile. This relationship held true even when adjusted for age, height, use of NSAIDs (non-steroidal anti-inflammatory drugs), socio-economic status, and estimated intake of lycopene and polyunsaturated fats. The researchers also found that men with low socio-economic status, a low intake of lycopene, and non-regular use of NSAIDs were more likely to develop prostate cancer. They did not, however, find any correlation between self-reported intake of EPA and DHA indicating that food frequency questionnaires are not an accurate method for estimating fish oil intake. The researchers speculate that fish oils may prevent the progression of prostate cancer by inhibiting the biosynthesis of eicosanoids from arachidonic acid. *Norrish, A.E., et al. Prostate cancer risk and consumption of fish oils: a dietary biomarker-based case-control study. British Journal of Cancer, Vol. 81, No. 7, December 1999, pp. 1238-42/*

## Breast cancer risk linked to fatty acid profile

CHAPEL HILL, NORTH CAROLINA. Breast cancer rates differ greatly between countries. They are 5 times higher in the United States than in Japan and twice as high in France as in neighbouring Spain. Differences in overall fat consumption in these countries have been extensively studied, but no link to breast cancer incidence has been detected so far. A large team of researchers from the Netherlands, Ireland, Spain, Finland, Switzerland, Germany and the United States now report that, while overall fat consumption may not be significant, the make-up of the fats could be. As part of the large EURAMIC Study the researchers investigated the link between the content of polyunsaturated fats in adipose (fat) tissue of postmenopausal women and breast cancer incidence. A total of 291 women with breast cancer and 351 controls were included in the study which involved 5 European medical centers. The women all had samples of adipose tissue taken (from the buttocks) and analyzed to determine the concentration of the main polyunsaturated fatty acids: the omega-3 acids - alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), and the omega-6 acids - linoleic acid (LA) and its metabolite arachidonic acid (AA). The study found no significant correlation between omega-3 fatty acid levels and breast cancer incidence, but did find a trend to increasing incidence with increasing levels of omega-6 fatty acids in the adipose tissue samples. The researchers also found a significant association between the ratio of EPA and DHA to LA levels and breast cancer incidence in 4 out of 5 of the medical centers involved in the study. Pooling all results showed that women with the highest ratio had a 35% lower breast cancer incidence than women with the lowest ratio. In other words, women with a relatively high adipose tissue level of EPA and DHA (the main components of fish oils) and a relatively low level of LA and its metabolites had a lower breast cancer risk. The researchers note that LA (linoleic acid) is the precursor of certain eicosanoids which may promote tumour growth. EPA and DHA inhibit the production of these harmful compounds and may also, on their own, inhibit tumour growth. The researchers also point out that several epidemiological studies have found an inverse correlation between fish consumption and breast cancer incidence and urge further studies to determine the relationship between the dietary intake of specific fatty acids and breast cancer risk. *Simonsen, Neal, et al. Adipose tissue omega-3 and omega-6 fatty acid content and breast cancer in the EURAMIC Study. American Journal of Epidemiology, Vol. 147, No. 4, 1998, pp. 342-52/*

## Fat consumption and cancer

LONDON, UNITED KINGDOM. Several major epidemiologic studies have found a clear association between a high dietary fat intake and the risk of developing breast and colon cancer. The correlation is particularly strong in the case of animal fats. One study found that a high fish or fish oil consumption is protective against later stage colon cancer in men, but has no effect on mortality from breast cancer. British medical researchers now report that fish and fish oils not only protect against colon cancer in men, but also against colon and breast cancer in women. This protective effect, however, is only apparent in countries where the intake of animal fats is high. In other words, a high intake of fish or fish oils counteracts the detrimental effects of a high animal fat consumption. The study compared cancer mortality rates in 24 European countries, Canada and the USA with fish consumption and the intake of animal fats. In countries where the animal fat intake was high the researchers found a clear inverse correlation between the ratio of fish fat to animal fat and the risk of developing breast cancer in women and colon cancer in both men and women. A similar correlation was found between cancer risk and the ratio of fish fat to total fat intake. The researchers conclude that a 15% decrease in animal fat intake combined with a 3-fold increase in fish oil intake could possibly reduce male colon cancer risk by as much as 30% in countries with a high animal fat intake. A 3-fold increase in fish oil intake could be achieved by eating fish three times a week or by taking two standard fish oil capsules daily. / Caygill, C.P.J., et al. Fat, fish, fish oil and cancer. *British Journal of Cancer, Vol. 74, No. 1, July 1996, pp. 159-64 / Coromega* \*Additional References\* 1. de Deckere, E.A. Possible beneficial effects of fish and fish n-3 polyunsaturated fatty acids in breast and colorectal cancer. \*European Journal of Cancer

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Prevention\*, Vol. 8, July 1999, pp. 213- 21 \*Conclusion:\* Increased consumption of n-3 PUFAs may lower risk of breast and colon cancer. \*OILOFPISCES.COM\* \*INTERNATIONAL HEALTH NEWS\* Copyright © 2006 by Hans R. Larsen Oilofpisces.com does not provide medical advice. Do not attempt self- diagnosis or self-medication based on our reports.

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