

## **Fatty fish and fish omega-3 fatty acid intakes decrease the breast cancer risk**

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### FROM ABSTRACT

Although it is believed that fish  $\omega$ -3 fatty acids may decrease breast cancer risk, epidemiological evidence has been inconclusive. This study examined the association between fish and fish  $\omega$ -3 fatty acids intake with the risk of breast cancer in a case-control study of Korean women.

### Methods

We recruited 358 incident breast cancer patients and 360 controls with no history of malignant neoplasm from the National Cancer Center Hospital between July 2007 and April 2008. The study participants were given a 103-item food intake frequency questionnaire to determine their dietary consumption of fish (fatty and lean fish) and  $\omega$ -3 fatty acids derived from fish (eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA)).

### Results

High intake of fatty fish was associated with a reduced risk for breast cancer in both pre- and postmenopausal women for highest vs. lowest intake quartiles.

Among premenopausal women, there was a significant reduction in breast cancer risk for the highest intake quartiles of  $\omega$ -3 fatty acids, compared to the reference group who consumed the lowest quartile of intake.

### Conclusion

These results suggest that high consumption of fatty fish is associated with a reduced risk for breast cancer, and that the intake of  $\omega$ -3 fatty acids from fish is inversely associated with postmenopausal breast cancer risk.

### THESE AUTHORS ALSO NOTE:

Breast cancer is one of the most prevalent cancers in the world. Both the World Cancer Research Fund and the American Institute for Cancer Research indicates, "food and nutrition may affect the status of hormones that can modify breast cancer risk."

## RESULTS

“There was a protective effect of fatty fish intake for all study subjects in the highest quartile. The protective effect of fatty fish intake was observed in both pre- and postmenopausal women.”

“Among premenopausal women, there was a significant reduction in breast cancer risk for the highest intake quartiles of  $\omega$ -3 fatty acids, compared to the reference group who consumed the lowest quartile of intake.”

After adjusting for confounding variables in postmenopausal subjects:

- 1) Consuming more than 101 mg of EPA/day decreased breast cancer risk by 62% compared to the reference group.
  - 2) Consuming more than 213 mg of DHA/day decreased breast cancer risk by 68% compared to the reference group.
- [The reference group consumed less than 14 mg of EPA and 37 mg of DHA per day]

These authors suggest that a possible mechanism for the benefit of fish oil in inhibiting breast cancer is by inhibition of the cyclooxygenase gene expression. [Cyclooxygenase is the enzyme that converts the fat arachidonic acid into prostaglandin E2 (PGE2); PGE2 is linked to breast cancer]

## CONCLUSION

“This investigation has identified fish and fish  $\omega$ -3 fatty acid intake as an important potential protective factor in the nutritional etiology of breast cancer. Our results revealed an inverse relation between breast cancer risk and dietary intake of fatty fish and  $\omega$ -3 fatty acids from fish.”

## KEY POINTS FROM DAN MURPHY

- 1) Breast cancer is one of the most prevalent cancers in the world.
- 2) Both the World Cancer Research Fund and the American Institute for Cancer Research indicates, "food and nutrition may affect the status of hormones that can modify breast cancer risk."

## IN THIS STUDY:

- 3) "There was a protective effect of fatty fish intake for all study subjects in the highest quartile. The protective effect of fatty fish intake was observed in both pre- and postmenopausal women."
- 4) "Among premenopausal women, there was a significant reduction in breast cancer risk for the highest intake quartiles of  $\omega$ -3 fatty acids, compared to the reference group who consumed the lowest quartile of intake."
- 5) After adjusting for confounding variables in postmenopausal subjects:
  - A)) Consuming more than 101 mg of EPA/day decreased breast cancer risk by 62% compared to the reference group.
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- 6) These authors suggest that a possible mechanism for the benefit of fish oil in inhibiting breast cancer is by inhibition of the cyclooxygenase gene expression. [Cyclooxygenase is the enzyme that converts the fat arachidonic acid into prostaglandin E2 (PGE2); PGE2 is linked to breast cancer]
- 7) "This investigation has identified fish and fish  $\omega$ -3 fatty acid intake as an important potential protective factor in the nutritional etiology of breast cancer."
- 8) There is "an inverse relation between breast cancer risk and dietary intake of fatty fish and  $\omega$ -3 fatty acids from fish."
- 9) "These results suggest that high consumption of fatty fish is associated with a reduced risk for breast cancer, and that the intake of  $\omega$ -3 fatty acids from fish is inversely associated with postmenopausal breast cancer risk."