

# How fish is cooked affects heart-health benefits of omega-3 fatty acids

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If you eat fish to gain the heart-health benefits of its omega-3 fatty acids, baked or boiled fish is better than fried, salted or dried, according to research presented at the American Heart Association's Scientific Sessions 2009.

And, researchers said, adding low-sodium soy sauce or tofu will enhance the benefits.

"It appears that boiling or baking fish with low-sodium soy sauce (shoyu) and tofu is beneficial, while eating fried, salted or dried fish is not," said Lixin Meng, M.S., lead researcher of the study and Ph.D. candidate at the University of Hawaii at Manoa. "In fact, these methods of preparation may contribute to your risk. We did not directly compare boiled or baked fish vs. fried fish, but one can tell from the (risk) ratios, boiled or baked fish is in the protective direction but not fried fish."

The findings also suggest that the cardioprotective benefits vary by gender and ethnicity — perhaps because of the preparation methods, genetic susceptibility or hormonal factors.

Many studies have suggested that eating omega-3 fatty acids reduces the risk of heart disease; however, little is known about which source is most beneficial.

In this study, researchers examined the source, type, amount and frequency of dietary omega-3 ingestion among gender and ethnic groups.

Participants were part of the Multiethnic Cohort living in Hawaii and Los Angeles County when they were recruited between 1993 and 1996. The group consisted of 82,243 men and 103,884 women of African-American, Caucasian, Japanese, Native Hawaiian and Latino descent ages 45 to 75 years old with no history of heart disease.

Researchers divided their intake of canned tuna, other canned fish, fish excluding shell fish, or soy products that contain plant omega-3s (soy, tofu and shoyu) into quintiles, quartiles, or tertiles when applicable. They also surveyed the preparation methods: raw, baked, boiled; fried; salted or dried. The initial study did not consider grilled fish.

Those in the highest quintile consumed a median 3.3 grams of omega-3 fatty acids a day. The lowest quintile consumed a median of 0.8 grams a day.

Omega-3 intake was inversely associated with overall risk of death due to heart disease in men — a trend mainly observed in Caucasians, Japanese Americans and Latinos. However, there weren't many blacks or Hawaiians in the study, so the results should be interpreted cautiously, Meng said.

Overall, men who ate about 3.3 grams per day of [omega-3 fatty acids](#) had a 23 percent lower risk of cardiac death compared to those who ate 0.8 grams daily.

"Clearly, we are seeing that the higher the dietary omega-3 intake, the lower the risk of dying from heart disease among men," Meng said.

Japanese and Hawaiians eat fish more often compared to whites, blacks and Latinos, and they prepare fish in a variety of methods, Meng noted.

For women, the omega-3 effect was cardioprotective at each level of

consumption but not consistently significant, Meng said. Salted and dried fish was a risk factor in women.

In contrast, adding less than 1.1 gram/day shoyu and teriyaki sauce at the dinner table was protective for men but not for greater than 1.1 gram/day. For women, shoyu use showed a clear inverse relationship to death from heart disease. She noted that shoyu that is high in sodium can raise blood pressure, so she stressed low-sodium products. Eating tofu also had a cardioprotective effect in all ethnic groups.

"My guess is that, for women, eating omega-3s from shoyu and tofu that contain other active ingredients such as phytoestrogens, might have a stronger cardioprotective effect than eating just omega-3s," said Meng, noting that further studies are needed to confirm the hypothesis.

During the average 11.9 years of follow-up, 4,516 heart-related deaths occurred in the group, according to state and national death records, which were cross-referenced through the end of 2005.

The study didn't consider possible dietary changes over time; subjects who were diagnosed with heart disease after their baseline food intake surveys might have modified their eating habits. Further, the study didn't account for the possible effects of fish-oil supplementation.

In light of these limitations, the researchers plan to include subjects' dietary patterns over time and a cross-validation of their omega-3 levels through blood analysis.

"Our findings can help educate people on how much fish to eat and how to cook it to prevent heart disease," Meng said. "Alternately, if it is verified that the interactions between fish consumption, risk factors and ethnicity are due to [genetic susceptibility](#), the [heart-disease](#) prevention message can be personalized to ethnic groups, and future study could

identify susceptibility at the genetic level."

More information: For specific information on the recommendations, visit [www.americanheart.org/presenter.jhtml?identifier=4632](http://www.americanheart.org/presenter.jhtml?identifier=4632)

Source: American Heart Association ([news](#) : [web](#))

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