Dynamic Chiropractic

NUTRITION / DETOXIFICATION

Omega-3 Fatty Acids and Mercury Levels in Fish

James P. Meschino, DC, MS

You know omega-3 fats are good for you and your patients, but what about the risk of getting too much mercury from eating fish on a regular basis? Which fish should be avoided for this reason and which fish are safe? And can you get some additional omega-3 fats from sources other than fish? Here are the answers to these important questions patients often ask.

The Benefits of Omega-3 Fats

Omega-3 fats are highly beneficial to human health in that the cells of our bodies convert these unique fats into small hormones called prostaglandins (or eicosanoids). The prostaglandins made from omega-3 fats (prostaglandin series 3 or PG-3) reduce the risk of heart disease by opening up blood vessels and reducing the stickiness of our blood, so abnormal clots don't form as easily. PG-2 also makes our joints and tissues less prone to inflammation, a major benefit if you have some arthritis or inflammatory bowel disease (e.g. ulcerative colitis).

In addition, PG-2 has also been shown to reduce risk of cancer, as it signals our cells to replicate themselves at a slower rate. Slower cell replication reduces the chances of a genetic mutation occurring, one that may lead to cancer. Both animal and human studies demonstrate the anti-cancer effects of omega-3 fats.

PG-2 also makes your skin smooth and soft, and helps counter eczema problems. Recent studies have shown that omega-3 fat consumption can also reduce your risk of developing Alzheimer's disease and dementia as you age. All in all, it's worth having a strategy to ensure adequate omega-3 fat consumption to derive these many benefits.

Fish and Mercury Contamination

Mercury is a mineral that exists naturally in the environment. In addition, thousands of tons are released into the air each year through pollution and waste. Bacteria and natural processes can transform mercury into the organic mercury compound methylmercury, which is a poisonous substance.

Methylmercury accumulates in streams and oceans. It also accumulates in the food chain, as each fish absorbs all the mercury of the smaller fish or organisms it has eaten. That is why the oldest and largest fish, such as shark or swordfish, have the highest levels. Studies show that methylmercury levels are higher in people who regularly eat fish.

The effects of methylmercury toxicity include paraesthesia (a pricking, tingling or creeping sensation on the skin), depression and blurred vision. Research also suggests prenatal and infant exposure can affect attention span, language, visual-spatial skills, memory, and coordination. The National Academy of Sciences estimates that nearly 60,000 children each year are born at risk for neurological problems due to methylmercury exposure in the womb.

Watching Your Mercury Intake From Fish

Fish that contain more than 1,000 mg of omega-3 fats per serving (approximately 3 ounces or 100 grams) and are *low* in mercury include spiny dogfish, herring, sardines, pilchards, lake trout, Atlantic sturgeon, wild Pacific salmon, anchovies, sprats, bluefish, and mullet. According to the U.S. Department of Health and Human Services and the Environmental Protection Agency, five of the most commonly eaten fish that are low in mercury are shrimp, canned light tuna, salmon, pollock and catfish. They offer this advice for counseling pregnant women about fish high in mercury (it's good advice for the rest of us as well):

- Do not eat shark, swordfish, king mackerel, or tilefish, because they contain high levels of mercury.
- Eat up to 12 ounces (two average meals) a week of a variety of fish and shellfish that are lower in mercury:
- Albacore ("white") tuna, has more mercury than canned light tuna. So, when choosing your two meals of fish and shellfish, you may eat up to 6 ounces (one average meal) of albacore tuna per week.

Vegetarian Sources Of Omega-3 Fats

In addition to fish and seafood, some plant-based foods contain omega-3 fats. However, the omega-3 in beans, seeds, cereals, nuts, etc., is ALA (alpha-linolenic acid). Fish contain EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), which are the more widely known omega-3-fats. EPA and DHA are famous because the former is converted by the body into mini-hormones that directly reduce the risk of heart disease (by opening up blood vessels and decreasing blood stickiness), reduce inflammation and reduce cancer risk (by slowing cellular replication rates), while the latter is used to support brain function.

The body can convert ALA into EPA and DHA. Scientists argue about how fast this conversion takes place, but there is ample evidence that consuming ALA from plant-based foods provides similar benefits to consuming EPA and DHA from fish. My recommendation is to have two fish servings per week, take a daily supplement containing fish, flaxseed and borage seed oil, and provide additional omega-3 fat to your body by regularly consuming plant-based foods that are rich sources of ALA. Here is a list of plant-based foods high in ALA omega-3-fat:

- Canola oil (organic): 0.80 g in 1 tsp
- Flax seed (powder): 3.50 g in 2 tbsp
- Pumpkin seeds: 4.0 g in 1/4 cup
- Tofu: 0.36 g in 4 ounces
- Walnuts: 4.54 g in 1/2 cup
- Salba or chia seed: 3.05 g in 2 tbsp
- Soybean oil: 0.80 g in 1 tsp

As well, small amounts of ALA are found in kiwi fruit, black raspberries, most soy products, cauliflower, broccoli, Brussels sprouts, winter squash, turnip greens, spinach, kale, strawberries, and mustard seeds. Consuming these foods can further support your omega-3 fat nutritional status, but on their own, are likely insufficient to produce major omega-3 fat benefits.

Foods Fortified With Omega-3 Fats: The Latest Craze

In the U.S., more than 230 new products enriched with omega-3 hit the market this past year, with more on the way. The problem is that the amount of omega-3 being added to items like orange juice is quite small and fairly insignificant in the grand scheme of things. It's really more marketing than science. Fortified foods can help prop up a person's omega-3 status, but won't help them achieve optimal omega-3 status on their own. So, from that standpoint, I guess a little more is

better than a little less.

Food manufacturers are adding omega-3 fats to spreads, salad dressings, cereals, breads and muffins. Just make sure you're not getting a ton of saturated fat, cholesterol or trans fats from the same foods, as fats of this nature will easily undo any good provided by the added omega-3 fat.

As for omega-3 fat enriched eggs, they still contain 250 mg of cholesterol per yolk. Heart disease guru Dean Ornish, MD, cautions against ingesting more than 100-150 mg of cholesterol on any given day. So, a three-egg omelet containing, 750 mg of cholesterol is quite likely to increase your risk of premature heart disease compared to any protection offered by the small amount of omega-3 fat it contains. My advice: Eat the whites and forget about the yolk altogether.

So, What's the Game Plan?

This is what I recommend as an omega-3 fat and essential fatty acid strategy: Eat two fish servings per week, on average, choosing fish that have the highest omega-3 fat content and the lowest mercury content. In addition, take a supplement each day that contains: 400 mg of fish oil (mercury-free), 400 mg of flaxseed oil and 400 mg of borage seed oil.

I take 2-3 capsules per day of a supplement with these exact ingredients and doses. The fish oil is high in omega-3 fats (50 percent omega-3 fat - EPA and DHA) and devoid of mercury and all other contaminants. The flaxseed oil is a rich source of an omega-3 fat (58 percent) that the body can convert to the same omega-3 fats you get from fish. The borage seed oil contains a unique essential fat (GLA) that helps to suppress inflammation, improves skin softness and blocks the formation of prostaglandins that are associated with increased cancer risk.

Finally, ingest vegetarian foods that can boost your omega-3 fat intake, keeping in mind that these sources contain ALA, not EPA and DHA. This plan enables you to easily acquire the minimum of 400 mg per day of EPA/DHA that is linked to health promotion and decreased risk of dementia and Alzheimer's disease, and to acquire the ALA and GLA that help reduce inflammation, improve skin texture, and block the build-up of prostaglandin series-2 end products linked to inflammation, heart disease and cancer.

Omega-3Content of Fish and Shellfish (grams per 100 g portion)	
Salmon, Atlantic, farmed, cooked, dry heat	1.8 g
Anchovy, European, canned in oil, drained	1.7 g
Sardine, Pacific, canned in tomato sauce, drained solid with bone	1.4 g
Herring, Atlantic, pickled	1.2 g
Mackerel, Atlantic, cooked, dry heat	1.0 g
Trout, rainbow, farmed, cooked, dry heat	1.0 g
Swordfish, cooked, dry heat	0.7 g
Tuna, white, canned in water, drained solids	0.7 g
Pollock, Atlantic, cooked, dry heat	0.5 g
Mussel, blue, cooked, moist heat	0.7 g
Oyster, Eastern, wild, cooked, dry heat	0.5 g
Flatfish (flounder and sole species), cooked, dry heat	0.4 g

Halibut, Atlantic and Pacific, cooked, dry heat	0.4 g
Scallop, mixed species, cooked, dry heat	0.3 g
Shrimp, mixed species, cooked, moist heat	0.3 g
Clam, mixed species, cooked, moist heat	0.2 g
Haddock, cooked, dry heat	0.2 g
Cod, Atlantic, cooked, dry heat	0.1 g
Source: USDANutrient Database for Standard Reference	

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