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'The Fish on My Plate' — A Global Fish Tale

Analysis by Dr. Joseph Mercola | December 13, 2023

STORY AT-A-GLANCE

- A PBS Frontline documentary, "The Fish on My Plate," tracks a best-selling author's global pursuit of an answer to the question, "What fish should I eat that's good for me and good for the planet?"
- For a whole year, Greenberg gave up meat and ate only fish — some 700 portions — while investigating open-sea fishing and fish-farming practices in places like Alaska, Norway and Peru
- Greenberg's radical change in diet had virtually no effect on helping him address his cholesterol issues and high blood pressure, but it did enable him to lose weight and raise his omega-3 levels

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After having blood drawn on September 21, 2015, as a baseline measure of his health, best-selling author and lifelong fisherman Paul Greenberg undertook what one media source characterized as "'Super Size Me' for healthy eaters."[1] For a whole year, as a strict pescatarian, Greenberg ate fish and other seafood daily. All told, he consumed some 700 portions, often eating fish for breakfast, lunch and dinner on the same day.

Greenberg's story is featured in a PBS Frontline documentary, "The Fish on My Plate,"[2] which tracks his yearlong journey to identify which fish are the healthiest for human consumption and best for the planet. Along the way, Greenberg successfully draws our attention to a few new options for increasing the sustainability of the global seafood

industry. The documentary also features insights and ideas from some of the industry's top business and thought leaders.

As he travels the world, Greenberg crosses paths with the many "ordinary people" who are involved in putting fish on your plate. With farmed fish and genetically-engineered fish capturing attention in this film, Greenberg's reporting gives you a keen sense of how far mankind has moved away from individual people casting a line into the water in hopes of catching one or two fish.

While his investigation makes for entertaining viewing, the results of Greenberg's efforts to better his personal health by giving up meat in favor of fish were, at best, mixed.

The Premise of 'The Fish on My Plate'

As the nearly 90-minute documentary unfolds, the premise for Greenberg's mission seems to have two primary foci:

- Conduct a personal health experiment by eating daily portions of fish and other seafood with the expectation that very high amounts of omega-3 fats may help resolve his cholesterol levels, depression, high blood pressure and sleep issues
- Evaluate open-sea fishing and fish-farming practices around the globe to gain a better understanding of what's working and what's not

Among the thought-provoking insights gleaned from his global exploration of the fishing industry, Greenberg learned:

- If you live in the U.S., the average piece of fish travels more than 5,000 miles before it arrives to your plate
- Around 90% of the fish consumed in the U.S. is imported, yet the U.S. exports around one-third of what is caught nationally
- It's not unusual for a fish caught in America to be frozen whole; shipped to a country like China where it is defrosted, deboned and packaged using cheaper labor; then refrozen and shipped back to the U.S., where it is recorded as an import

- As much as 25% of all fish caught globally is sent to processing plants to be ground up and boiled down, then turned into fish oil or dried into fish meal that is used for animal/fish feed, fertilizer and pet food
- At the time of filming, Peru provided nearly 30% of the anchovies used worldwide to produce fish oil and fish meal; however, due to El Niño effects during the 2016 to 2017 catch year, output dropped to around 16%[3]

The Importance of Sustainability

One of the sustainable ideas raised in the film is attributed to Connecticut-based GreenWave ocean farms. They have found a way to grow clams, mussels and oysters on ropes suspended beneath ocean buoys, where these shellfish clean the surrounding ocean by soaking up carbon, nitrogen and phosphorous.

GreenWave founder Bren Smith calls his sustainably grown kelp "the new kale" and a "gateway drug to an entirely new cuisine," suggesting it could replace corn as animal feed at some point in the future. Smith says:

> *"There are 10,000 edible plants in the ocean … We can scale [kelp] because it's vertical. We can grow incredible amounts of food in small areas, 10 to 30 tons of seaweed or a couple hundred thousand shellfish per acre, if we grow this way.*
>
> *The reason it's replicable and scalable, and so cheap, is because it's a simple rope-scaffolding system. We're able to start these farms up extremely quickly, and we don't need feed, fertilizer or fresh water, things that are expensive and are going to be increasingly in short supply."*

Due to their status as "zero-input," foods, Smith suggests his seafood is among "the most sustainable food production on the planet." He also claims at some point in the future it's going to be "the most affordable food on the planet."

Was Greenberg Healthier After Eating All That Fish?

After a year of eating fish, Greenberg was overwhelmingly successful in his quest to improve his omega-3 index, which was recorded at 10.5%. Greenberg used a company called OmegaQuant to complete an omega-3 fatty acid blood test.

This is a great test and I would encourage everyone to get it done, as DHA is vital element for cellular and metabolic health. The last time I had my test done it was 9.9% and it confirmed my intake of DHA from sardines, anchovies and fish roe was just fine. About Greenberg's results, Bill Harris, Ph.D., president and CEO of OmegaQuant, said to Greenberg:

> *"At 10.5* [percent] *you're in pretty rarefied territory … The average American is around maybe 5%. The average Japanese, at least a few decades ago, was around 9% or 10%."*

To learn how that high level of omega-3 correlates to his overall health, Greenberg consulted his general practitioner, Dr. Richard Shepard, clinical instructor in NYU Langone Medical Center's department of medicine. The results revealed Greenberg's:

- Blood pressure went "up a tiny bit"
- Ratio of good cholesterol (HDL) to bad cholesterol (LDL) remained unchanged
- Triglycerides were "virtually the same"

About the results, Greenberg said to Shepard:

> *"Looking at these numbers, I have to say I'm a little disappointed. I've been eating a lot of fish — a lot of oily fish — like sometimes three times a day. I thought I would see some movement in these numbers. Do you think these numbers are an accurate picture of health?"*

Said Shepard: "These numbers are an accurate picture of your blood lipids, but they don't necessarily reflect your health. They're just one factor." In response to Greenberg's

desire to know if Shepard saw any noticeable changes in him as a result of eating the fish-heavy diet, Shepard stated: "I'd say you are virtually the same. Unchanged."

Mercury Is a Concern for Anyone Who Consumes Fish Daily

While omega-3 gains are a benefit of regular fish consumption, not all fish are high in omega-3, and most are contaminated with mercury, so indiscriminate fish eating can be risky. Selecting fish high in omega-3 and low in mercury is a crucial consideration whenever you eat fish.

Research published in 2010, which quantified the contributions to total mercury in the U.S. seafood supply by 51 different varieties of fish and shellfish, found tuna was responsible for more than one-third of Americans' total exposure to methylmercury.[4] Mercury is a known neurotoxin that wreaks havoc on your body and brain. Greenberg tested hair to obtain his mercury level, which turned out to be 5 parts per million (ppm). Greenberg told NPR:[5]

> *"So, people will see in the film that I get some disturbing results regarding my mercury levels at the end of a year. I'm not a child or a woman of childbearing age, so I can be a little cavalier with my mercury levels. But I've backed away from eating fish every day. I've probably backed down to three or four times per week, which is still double what the average American eats."*

Fish You Should Not Eat Because It Will Damage Your Health

I've never been a fan of farmed fish. I was at a New Jersey restaurant earlier this year and asked the waiter how the salmon could be organic, and after talking to his supervisor, he said that it was farmed! One of the worst farmed fish is farmed salmon, which is best avoided because it:

- Is one of the most toxic foods in the world;[6] tests reveal farmed salmon is five times more toxic than any other food product tested

- Contains about half the omega-3 levels of wild salmon
- Is often fed a genetically-modified diet of corn and soy products
- May contain antibiotics, pesticides and other chemical toxins due to the unsanitary and overcrowding conditions that often accompany fish-farming operations
- May be genetically engineered

In addition, avoid large carnivorous fish such as marlin, sea bass and tuna, including canned tuna, as these tend to contain some of the highest concentrations of mercury. Both the U.S. Environmental Protection Agency and U.S. Food and Drug Administration have placed canned tuna on its "choices to avoid" list[7] for pregnant women and small children due to its high mercury levels.

For more information about mercury in fish, see the Mercury Policy Project's website, Mercury and Fish: The Facts.[8] They have a helpful guide you can print out for reference.[9] A 2015 article in Investigate West also addressed this issue, and includes a guide to how many meals per week you can safely eat based on any given seafood's contamination level.[10]

Why Farmed Fish Is a Poor Choice

Because Greenberg wanted to learn more about the benefits and impact of farmed salmon versus wild salmon he traveled to[11]

- Norway, the birthplace and enduring epicenter of salmon farming, which is a multimillion-dollar industry responsible for 70% of the salmon consumed worldwide
- Alaska, where as many as one in three salmon are born in hatcheries and later released and caught in the wild

According to the Food and Agriculture Organization of the United Nations,[12] industrial fish farming, also known as aquaculture, is the fastest growing form of food production in the world. Fifty percent of the world's seafood comes from fish farms and about 580 aquatic species are currently farmed worldwide.[13]

At first glance, farmed fish may seem like a good idea to help protect wild seafood populations from overfishing. In reality, however, the industry is plagued with many of the same problems surrounding land-based **concentrated animal feeding operations (CAFOs)**, including disease, inferior nutrition and pollution.

Due to the horrible conditions, some have described fish farms as "CAFOs of the sea." Many farmed fish are fed genetically engineered corn and soy, which is a completely unnatural diet for marine life. Others are fed fishmeal, which is known to accumulate industrial chemicals like PCBs and dioxins.

Fish waste and uneaten feed litter the sea floor beneath these farms, generating bacteria that consume oxygen vital to shellfish and other bottom-dwelling sea creatures. Farmed fish waste promotes algal growth that harms the water's oxygen content, posing risks to coral reefs and other aquatic life.

Due to the close quarters in which farmed fish are raised, combined with their unnatural diets, disease can spread quickly. Because some farmed fish are raised in pens in the ocean, pathogens can spread widely and do harm to other marine life.

Concentrated antibiotics, pesticides and other chemicals are often used to fight diseases and parasites common to fish farms. One study found a drug used to kill sea lice also kills other marine invertebrates, can travel up to half a mile and persists in the water for hours.[14]

In the documentary, Smith noted his dislike for salmon farms due to their use of antibiotics and fertilizers, as well as their need for a constant supply of smaller wild fish for food. He asserted: "I used to work on the salmon farms. I saw things first hand. We were really running Iowa pig farms in the ocean."

Fish You Might Consider Eating More Often

While Greenberg's story is attention-grabbing and interesting, it's evident he took fish consumption to an extreme. In health, as with most of life, it seems best to avoid such extremes. Greenberg also sampled some of the fish on my "do not eat" list shown above.

In my opinion, he would have been better served by limiting his selections to only the fish best known to promote positive health benefits.

Below is a list of the healthiest fish I suggest you consider eating more often. As is the case with these, your best choices are small, cold-water, fatty fish, which are an ideal source of omega-3s with a low risk of contamination. Wild-caught salmon is another excellent source that is low in mercury and other environmental toxins.

- Anchovies
- Sardines
- Mackerel
- Herring
- **Wild-caught Alaskan salmon** (certified)

About Alaska salmon, Richard Nelson, an Alaska-based cultural anthropologist, radio host and writer, stated: "The most responsible thing you can do is eat wild-Alaskan salmon. Every time you buy a can of Alaska salmon or you buy a filet, you're saying, 'Yes, I like what you're doing in Alaska, keep doing it.' You're getting something fantastic to eat, and you're voting 'yes' for something that really matters in our world."

With few exceptions, outside of the varieties mentioned above, much of the rest of the world's fish supply is heavily tainted with industrial toxins and pollutants. Given the dismal state of pollution worldwide, it's quite common for fish to be tainted with heavy metals such as arsenic, cadmium, lead, mercury, PCBs and radioactive poisons.

For this reason, it is important to be selective in the types of fish you consume, focusing on those high in healthy fats and low in contaminants. A general guideline is the closer to the bottom of the food chain the fish is, the less contamination it will accumulate. To encourage you to try these fish, I recommend you experiment by adding anchovies or sardines to your next salad. You may also want to check out my **personal lunch recipe** and **healthy baked salmon recipe**.

Why Omega-3 Fats Are Vital to Supporting Your Overall Health

Omega-3 fats are a continuing topic of interest in the news,[15,16,17] and I cannot emphasize enough how vital they are to your overall health. Given that most people do not eat fish regularly, fish oil supplements have become an increasingly popular alternative to help ensure you're getting enough of these important fats. When supplementing, I strongly recommend you choose an animal-based omega-3. My personal favorite is krill oil.

Krill oil contains the indispensable animal-based EPA and DHA omega-3s your body needs. With the help of phospholipids, the nutrients in krill oil are carried directly to your cell membranes where they are more readily absorbed. They can also cross your blood-brain barrier to reach important brain structures.

Animal-Based Omega-3s Have Been Validated as Beneficial to Your Heart and More

Over the years, I have discussed the many benefits of omega-3s related to the vital support they give to your body in terms of supporting brain function, joints, skin and vision, among others, including your heart.[18,19]

A study published in Mayo Clinic Proceedings[20] validated previous studies suggesting an increase in omega-3 intake may benefit your heart. After reviewing 34 studies on eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), researchers confirmed those who consume fish and/or omega-3 supplements may help improve their cardiovascular health.

Higher-risk populations, such as those with elevated triglyceride or LDL levels, seemed to benefit even more from omega 3s than their healthier counterparts.

Closing Thoughts on Greenberg's Year of Fish Consumption

Laughing to himself, Greenberg wraps up the film and his year of zealous fish consumption with these thoughts:

> *"All that fish I ate! I was surprised by the medical results, but I do feel better after a year of eating fish. Anecdotally, people say I look better. They say my skin is better ... But maybe it's just a giant placebo effect … This is not where I thought this journey would take me. All year, I was feeling smug. You all keep eating your artery-blocking, earth-destroying land meat, but not me. I'm eating fish and getting younger by the day."*

Greenberg shared with NPR an observation he made about how the fish-based diet affected his weight, resulting in a healthy amount of weight loss. He said:[21]

> *"The other thing that happened with eating fish all the time is that I lost weight. Now, there's a confounding factor: When you go to a restaurant, the fish always comes with the healthy stuff. If you order the steak, it comes with fries, but if you order the salmon, you get some nice steamed broccoli. I don't necessarily contribute the weight loss to the fish, but rather to it leading me to other healthier patterns of eating."*

In the end, Greenberg pledged: "I'll keep eating fish, but not every fish, and not every day." That seems like good advice for all of us.

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