NebGuide

University of Nebraska–Lincoln Extension, Institute of Agriculture and Natural Resources

G2253

Sustainable Seafood Consumption

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This product will help consumers make healthier dietary choices by providing reliable information about nutrition and sustainable seafood consumption.

Benefits of Consuming Fish and Seafood

The 2010 Dietary Guidelines for Americans recommends that Americans consume 8 or more ounces of seafood per week (less for children). It is recommended that pregnant and those planning to become pregnant consume 12 ounces per week. In 2010, Americans consumed about 15.8 pounds (just under 5 ounces per week) of seafood per year. Seafood contributes a range of nutrients, most notably omega-3 fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Consumption of about 8 ounces per week of a variety of seafood will provide an average of 250 mg per day of EPA and DHA.

The health benefits of consuming seafood is associated with reduced cardiac deaths among individuals with and without pre-existing cardiovascular disease. The benefits of adequate omega-3 fats for optimal neurological development are the basis for increasing the Dietary Guidelines recommendation for pregnant and lactating women and for young children. Consuming fish as part of two meals per week is considered the best food-based way to get adequate amounts of EPA and DHA, according to the guidelines.

Omega-3 Fatty Acids

Omega-3 fatty acids are polyunsaturated fatty acids (PUFAs) with a double bond at the third carbon from the methyl (CH_3) end. Omega-3 fatty acids are long chain and range from 18 carbons to 22 carbons in length. There are three types of omega-3 fatty acids. EPA *(figure 1)* and DHA are two long chain fatty acids that are found mostly in coldwater fish. Fish that live in cold water have higher omega-3s allowing the fat in their tissue to remain fluid. Salmon contains the highest amount of omega-3s, followed by trout, white tuna, king mackerel, sea bass, herring, oysters, mullet, and sardines. The third type of omega-3 fatty acid, alpha-linolenic acid (ALA) is found in plant sources, such as flaxseed, English walnuts, soy, wheat germ and canola oil *(figure 2)*. There are omega-3 eggs, which come from hens fed a diet that includes flaxseed. They contain nearly six times the omega-3 fatty acids, one-third less saturated fat and less cholesterol than conventional eggs. Potential health benefits are attributed to EPA and DHA, which are readily absorbed and used by the body. Your body converts ALA to EPA, and to a lesser extent, DHA. However, this process is relatively inefficient. Only about 5% is converted to EPA, which is why the Dietary Guidelines for Americans recommend eating fish twice per week.

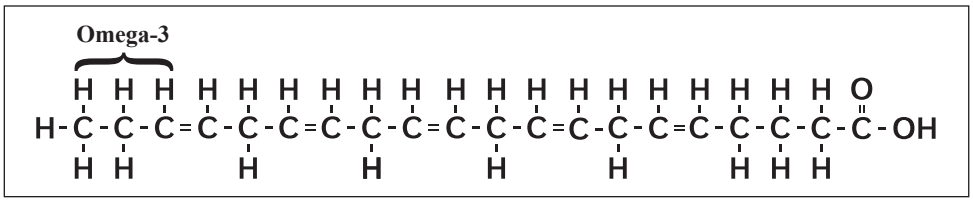

Figure 1. Eicosapentaenoic Acid (EPA)

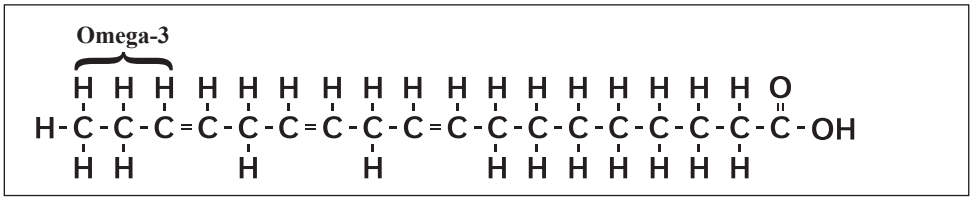

Figure 2. Alpha-Linolenic Acid (ALA)

Seafood Sustainability

Seafood sustainability is about insuring there is enough seafood for everyone, now and in the future. To have sustainable seafood, we must minimize reliance on limited supplies of fish and reduce the impact on the environment.

A fish species can be overfished, meaning that its population is below a prescribed threshold, essentially jeopardizing its survival. Fish can also be harvested at a rate that is too high for the stock to replenish itself. Many environmental factors, such as ocean acidity, temperature, oxygen levels, and pollutants, as well as fishing techniques impact marine habitat and sustainability. Greenhouse gas emissions, water usage, upstream waste, and pollution can factor into seafood sustainability. Currently, rating systems that define seafood sustainability do not consider all these variables. Instead, they focus more on numbers of fish or on fishing practices.

So which fish qualify as sustainable? Atlantic cod is not sustainable, but Pacific cod is. Alaskan salmon is sustainable. Some farm raised salmon do not meet the sustainability rule because they have been blamed for infecting and threatening the wild species. The farm raised salmon industry is working to improve sustainability. Wild caught salmon cannot meet the demand of the public, but farm raised seafood helps to meet this demand. Most domestic shrimp is farmed sustainably or caught in ways that limit the unintentional catch of fish and sea turtles. Americans consume more imported shrimp than domestic. Imported shrimp does not meet the sustainability requirement.

For a list of sustainably produced seafood, check out Monterey Bay Aquarium Seafood Watch at *http://www.seafoodwatch.org/*. Other organizations that assure the sustainability of seafood include Marine Stewardship Council (MSC), Global Aquaculture Alliance (GAA), Best Aquaculture Practice (BAP), and Global Good Aquaculture Practices (Global-GAP). Many larger grocery stores are working with suppliers to insure that they sell sustainable seafood. Please check with your fishmonger or grocery store about purchasing sustainable seafood.

Sustainability is a controversial and complex issue and not all certifying agencies agree on which seafood is sustainable. A good rule of thumb for deciding which fish to consume is 'if the whole fish will fit on a dinner plate, it is probably a good choice for the environment and your own health.'

Seafood Safety

According to the Environmental Protection Agency, almost everyone has at least trace amounts of mercury in their body, reflecting its pervasive presence in the environment. However, the amount of mercury in fish species varies. There are some things we can do to reduce our intake of mercury.

Mercury can be found in many fish. The bigger and the older the fish, the more mercury builds up. For example, a large bluefin tuna can be 10 years old and therefore would be more likely to contain higher levels of mercury. Contaminants are not only passed along in the food chain, they accumulate and concentrate toward the top of the food chain. Think of the ocean as a pyramid. Plankton at the bottom absorb small quantities of contaminants. Those contaminants then get concentrated at the next level of consumption and finally concentrate at the top of the pyramid.

Farm raised fish generally have a short lifespan and do not accumulate as much mercury as some species of wild fish. If farm raised fish are fed fish as a part of their diet, it is usually types that are low in mercury.

Canned tuna is the second most popular seafood choice in the United States. As a general rule, albacore tuna contains a greater amount of mercury than canned "light" tuna which is made with smaller species.

The Environmental Protection Agency (EPA) recommends that pregnant and lactating women and young children avoid eating swordfish, shark, tilefish sourced from the Gulf of Mexico and king mackerel.

Finally, mercury is found throughout fish tissue and is not reduced by cooking or freezing.

Ways to Increase Seafood in the Diet

Americans have a very limited palate when it comes to seafood. Try a new fish that you have not eaten before. Ask your fishmonger about purchasing and using underutilized fish. If you live near the coast, look for what is local and seasonal. Avoid buying fish during their breeding or spawning times. The Marine Conservation Society has developed a Fish Sustainability Table (*http://www.mcsuk.org/downloads/fisheries/BuyingFishInSeason.pdf*). Take advantage of what's fresh in the marketplace rather than going shopping with a specific fish in mind. Try canned fish such as sardines and salmon.

Sustainable seafood sourcing is complex and controversial. But consuming fish has health benefits and most Americans need to increase their consumption of fish and seafood. Both farmed and wild-caught are healthful choices and can be sourced sustainably. Look for third-party assurance that fish is sourced sustainably.

Eco-labeling using third-party certification and marine conservation groups are two ways to assure consumers that a particular fish is safe and sustainable. Certification programs in the United States include the Marine Stewardship Council (MSC), Global Trust for wild-caught fish, Global Aquaculture Alliance (GAA), Best Aquaculture Practices, and Global Good Aquaculture Practices (Global GAP) for farmed fish. Marine conservation groups include FishWise, Monterey Bay Aquarium, Sea Choice, the Environmental Defense Fund, and the Blue Ocean Institute that developed a series of environmental criteria to evaluate whether a fish or fishery is sustainable.

Resources

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This publication has been peer reviewed.

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Index: Foods & Nutrition
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