

Creating Health & Nutrition Fact Sheets

Tip

Eat fish several times a week. Canned salmon, tuna, herring, and sardines are good sources of beneficial omega 3 fatty acids.

Omega 3 fatty acids can sell foods and supplements, but the alphabet soup of omega 3, omega 6, DHA, EPA, AA, and AL may be hard to untangle. Here are definitions, information about effects, and recommendations for intake.

Why Are Fatty Acids Called "Omega Fatty Acids"?

Omega fatty acids are polyunsaturated fats. A fatty acid is a long string of carbon atoms. An

Omega Fatty Acids

unsaturated fat is distinguished from a saturated fat by the presence of a double bond in that carbon string. When fats have more than two double bonds, they are called polyunsaturated. Scientists have determined that there are two classes of polyunsaturated fats:

- Omega 6—the first double bond from the end of the fatty acid is at carbon atom 6
 - Omega 3—the first double bond from the end of the fatty acid is at carbon atom 3
- Omega 6 and omega 3 may also be called n-6 and n-3, respectively.

What Is Special about Omega 3 Fatty Acids?

We cannot make these in our bodies. We have to get them from foods. The three major omega 3 fatty acids are ALA, EPA, and DHA. Their full chemical names are at the end of this fact sheet. We can convert ALA to EPA and DHA, but not very efficiently.

- DHA is the major polyunsaturated fatty acid found in the brain. It is important for brain development and function.
- EPA is converted to hormone-like compounds called eicosanoids.

What Is Special about Omega 6 Fatty Acids?

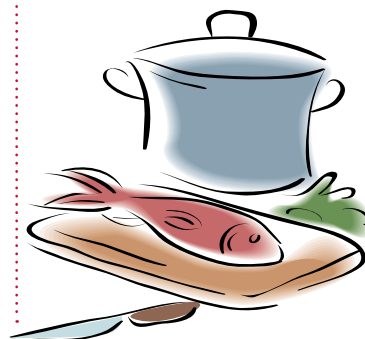
We can make some of these fatty acids in our bodies, but one must come from our diet. This is LA (see full name at the end of this fact sheet) and it is converted to a longer fatty acid called AA.

- AA is converted to hormone-like compounds called eicosanoids.

What Do Eicosanoids Do?

Eicosanoids regulate body functions like cell division and growth, blood clotting, and muscle activity. They affect our response to injury, infection, and certain diseases. The key difference between omega 3 and omega 6 fatty acids is the eicosinoids they form.

- The omega 3 EPA forms eicosenoids that tend to *reduce* inflammation. They protect against heart attacks, strokes, and inflammatory diseases such as arthritis, lupus, and asthma.



PENNSTATE



Cooperative Extension
College of Agricultural Sciences

- The omega 6 AA forms eicosenoids that *increase* the inflammatory response to injury, stress, infection, and disease. These increase clotting, restrict blood vessel size, and help contain an infection or reduce bleeding.

What Is the Current Recommended Intake of Omega 3 and 6 Fatty Acids?

Americans get 10 times more omega 6 than omega 3 in their diets. Experts think we should be eating more food sources of omega 3 and fewer sources of omega 6. However, there is no recommended ratio. The Institute of Medicine has established an adequate intake of ALA and LA at 1.1 to 1.6 grams per day and 12 to 17 grams per day, respectively. The U.S. Dietary Guidelines recommend eating 8 ounces or more of seafood per week.

What Foods Are Good Sources of Omega 3?

Fatty fish are the richest source. Fish like salmon, sardines, mackerel, trout, herring, and tuna are good sources of DHA and EPA. Certain algae make DHA and EPA. The fish eat these algae and store these fats in their bodies. Good sources of ALA are nuts, particularly walnuts, flaxseed, some

green vegetables, and soy and canola vegetable oils. Some foods are fortified with EPA and/or DHA, including spreads, cooking oils, soy milk, juices, and eggs. Additionally, Brussels sprouts, kale, spinach, and salad greens contain ALA.

What Foods Are Good Sources of Omega 6?

Many of our common vegetable oils, which are high in polyunsaturated fats like safflower, sunflower, corn, and soy, are good sources of LA. Any food made using these oils is also a source of omega 6 fatty acids. Our food system is rich in omega 6 fatty acids.

What Are Benefits of Eating More Omega 3 Fatty Acids?

- Fish and fish oil supplements reduce sudden death and heart attacks arising from cardiovascular disease.
- Fish oils lower blood triglycerides. Depending on the dose, this can be as much as 33 percent.
- Fish oils have a small but beneficial effect on blood pressure and heart rate levels.
- Omega 3 fatty acids can reduce joint tenderness and the need for corticosteroid drugs in rheumatoid arthritis.
- Plant sources of Omega

3s have a protective effect on bone metabolism.

- DHA may help with cognitive function.
- The American Psychiatric Association recommends consuming fatty fish at least twice a week due to the link between low Omega 3 levels and depression.

Are Omega 3 Supplements Safe?

Fish oil supplements have been used in many research studies. By themselves, they do not appear to increase bleeding events. However, if you are taking Warfarin or aspirin, check with your doctor before using fish oil supplements. Sometimes, these interact to cause bleeding at a wound or in the gastrointestinal tract. Up to 3 grams per day is generally regarded as safe by the U.S. Food and Drug Administration. It is important to talk to your health care provider before taking a supplement.

Examine Your Choices

If you do not eat much fish, look at your choices. Canned fish like salmon, sardines, and tuna are inexpensive choices for lunch. Include fish and shellfish in your diet at least twice a week.

Definitions

Omega 3

ALA—alpha-linolenic acid
EPA—eicosapentaenoic acid
DHA—docosahexaenoic acid

Omega 6

LA—linoleic acid
AA—arachidonic acid

Prepared by J. Lynne Brown, professor of food science, and Lynn James, extension educator, Northumberland County.

Source: dietary-supplements.info.nih.gov/FactSheets/Omega3FattyAcid-andHealth.asp.

"Position of the Academy of Nutrition and Dietetics: Dietary Fatty Acids for Healthy Adults," *J Acad Nutr Diet* 14, no. 1 (2014): 136–53.

extension.psu.edu

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

This publication is available in alternative media on request.

Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.

Produced by Ag Communications and Marketing

© The Pennsylvania State University 2014

Code UK143 2/14pod