Fatty Acids 101

• Fatty acids are necessary nutrients found in our food.

• The problem is how much we eat of each: The historical ratio of omega-6s to omega-3s may have been 1-to-1.
  • The current approximate dietary ratio of omega-3s to omega-6s falls between 15-to-1 and 16-to-1.
  • Modern foods are high in omega-6s.

• We need to restore the balance.
  • Eating an average of 2 grams of omega-3s a day will help.
Essential and Nonessential Fatty Acids

**Essential Fatty Acids**

• The body cannot make/manufacture the nutrient. It **must** come from the diet. The two essential fatty acids are linolenic acid and linoleic acid.

**Nonessential Fatty Acids: The Building Blocks of Fats (Lipids)**

• When you eat, pancreatic enzymes break dietary fat into fatty acid molecules that are absorbed into the small intestine to then be used by the body. The body can also synthesize some fatty acids from proteins and carbohydrates.
2 Main Nonessential Fatty Acids

- Both participate in immune function and the building of hormones and cell membranes.
- They are named based on their chemical structure.

- Eicosapentaenoic acid (omega-3)
- Arachidonic acid (omega-3)
Omega-3s

Alpha-Linolenic Acid (ALA)
- Shorter-chain form of omega-3
- Only omega-3 found in plants (seeds, legumes, walnuts)
- Building block of the longer form of omega-3 (DHA and EPA)

Docosahexaenoic Acid (DHA) and Eicosapentaenoic Acid (EPA)
- Longer-chain forms of omega-3
- Found mostly in animals (deepwater fish)
- Can be made from ALA by the body but not very well (11-18.5 percent)
Docosahexaenoic Acid (DHA)

Vital Part of Brain and Retina Structure
• The total dry weight of the adult brain is 50-60 percent lipid (fat), and more than 17 percent is in the form of DHA. In the retina, DHA makes up more than 33 percent of the total fatty acids.

Necessary for Infant Brain and Eye Development, Adult Cognitive Function
• Because of its structure, DHA may help keep the membranes of the your brain cells fluid and permeable, allowing for better signaling and better stress response.
• DHA is so important for development the placenta selectively takes up DHA for the developing baby.
• Higher DHA status from diets rich in long-chain fatty acids may be associated with decreased risk for age-related cognitive challenges.
Docosahexaenoic Acid (DHA)

In the eye:

• Photoreceptors, the cells that make vision possible, have more DHA than any other cells in the body.
• DHA protects against stress-related damage and maximizes function of photoreceptors.
Eicosapentaenoic Acid (EPA)

Associated with heart health support:

• Supports healthy heart functioning
• Supports healthy triglyceride levels
• Supports the function of the lining of your blood vessels
Omega-6s

Linoleic Acid (LA)
- Shorter-chain form of omega-6
- Only omega-6 found in plants (plant oils, corn, sunflower, soy)
- Building block of the longer form of omega-6 (arachidonic acid)

Arachidonic Acid (AA)
- Longer-chain form of omega-6
- Found mostly in animals (beef, chicken, pork)
- Can be made from LA by the body but not very well

Linoleic acid (omega-6)

Arachidonic acid (omega-6)
Arachidonic Acid (AA)

- Necessary for the natural repair and growth of skeletal muscle
- Used in the growth and repair of neurons
- Plays important role in the activation of the body’s natural inflammatory response function
Gamma Linolenic Acid (GLA)

A slightly different omega-6:

• Longtime folk remedy but little positive research
• Decreased PMS and menopausal symptoms
• Positive effects reported
• Supports a healthy response to seasonal changes*

It is important to include omega-3s if you supplement with GLA.

Sources include: borage oil, Evening Primrose Oil (MediHerb®), and Black Currant Seed Oil (Standard Process®)

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
## Dietary Sources of Omega-3s

<table>
<thead>
<tr>
<th>Food</th>
<th>Serving Size</th>
<th>Omega-3s (DHA/EPA)</th>
<th>Food</th>
<th>Serving Size</th>
<th>Omega-3s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon</td>
<td>3 oz.</td>
<td>1,825 mg</td>
<td>Flaxseed oil</td>
<td>1 tbsp.</td>
<td>7,249 mg</td>
</tr>
<tr>
<td>Tuna, canned</td>
<td>3 oz.</td>
<td>733 mg</td>
<td>Flaxseeds</td>
<td>1 tbsp.</td>
<td>2,350 mg</td>
</tr>
<tr>
<td>Shrimp</td>
<td>3 oz.</td>
<td>267 mg</td>
<td>Walnuts, English</td>
<td>1 tbsp.</td>
<td>2,574 mg</td>
</tr>
<tr>
<td>Cod</td>
<td>3 oz.</td>
<td>134 mg</td>
<td>Olive oil</td>
<td>1 tbsp.</td>
<td>103 mg</td>
</tr>
<tr>
<td>Flounder</td>
<td>3 oz.</td>
<td>426 mg</td>
<td>Pumpkin seeds</td>
<td>1 tbsp.</td>
<td>51 mg</td>
</tr>
</tbody>
</table>
Omega-3 Supplements

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## Omega-3 Supplements

How do these products compare to our other essential fatty acid products?*

<table>
<thead>
<tr>
<th>Product</th>
<th>Cod Liver Oil</th>
<th>Calamari Omega-3 Liquid</th>
<th>Tuna Omega-3 Oil</th>
<th>Tuna Omega-3 Chewable</th>
<th>Linum B₆ (630 mg of flaxseed oil per serving)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size and Form</td>
<td>3 perles</td>
<td>1 teaspoon</td>
<td>2 perles</td>
<td>2 perles</td>
<td>1 perle</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>2,000 IU</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>90 IU</td>
<td>NA</td>
<td>NA</td>
<td>100 IU</td>
<td>NA</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>5 IU</td>
<td>NA</td>
</tr>
<tr>
<td>EPA</td>
<td>210 mg</td>
<td>400 mg</td>
<td>60 mg</td>
<td>50 mg</td>
<td>NA</td>
</tr>
<tr>
<td>DHA</td>
<td>300 mg</td>
<td>800 mg</td>
<td>300 mg</td>
<td>240 mg</td>
<td>NA</td>
</tr>
<tr>
<td>Alpha-Linolenic Acid</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>~346 mg</td>
</tr>
</tbody>
</table>

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References


n3 Fatty acid dietary recommendations and food sources to achieve essentiality and cardiovascular benefits: Am J Clin Nutr June 2006 vol. 83 no. 6 S1526-1535S.