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Alpha-linolenic acid

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Overview:

Alpha-linolenic acid is a type of omega-3 fatty acid found in plants. It is similar to the omega-3 fatty acids that are in fish oil [eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)]. Alpha-linolenic acid can be converted into EPA and DHA in the body. Alpha-linolenic acid is highly concentrated in flaxseed oil and, to a lesser extent, in canola, soy, perilla, and walnut oils.

Omega-3 fatty acids have been shown to reduce inflammation and may help prevent chronic diseases such as heart disease and arthritis. In the body, these essential fatty acids are highly concentrated in the brain and may be particularly important for cognitive and behavioral health as well as normal growth and development.

Studies suggest that alpha-linolenic acid and other omega-3 fatty acids may help treat a variety of conditions. The evidence is strongest for heart disease and problems that contribute to heart disease, such as high blood pressure.

NOTE: Alpha-linolenic acid is not the same as alpha-lipoic acid, an antioxidant that helps the body turn glucose into energy. Confusion can arise because both alpha-linolenic acid and alpha-lipoic acid are both sometimes abbreviated as ALA.

Heart Disease

One of the best ways to help prevent and treat heart disease is to eat a diet that is low in saturated and trans fats, and rich in monounsaturated and polyunsaturated fats (particularly omega-3 fatty acids). Evidence suggests that people who eat an alpha-linolenic acid-rich diet are less likely to suffer a fatal heart attack. In one study, women who consumed high levels of alpha-linolenic acid (1.5 g per day) had a 46% lower risk of sudden cardiac death than those who consumed the lowest amount of alpha-linolenic acid (about half a gram per day).

High Cholesterol

People who follow a Mediterranean-style diet tend to have higher HDL ("good") cholesterol levels. This diet emphasizes whole grains, root and green vegetables, daily portions of fruit, fish and poultry, olive and canola oils, and alpha-linolenic acid (found in flaxseed oil). The diet also limits red meat while avoiding butter and cream. In addition, walnuts (which are rich in alpha-linolenic acid) have been shown to lower cholesterol and triglycerides in people with high cholesterol.

High Blood Pressure

Several studies suggest that diets or supplements rich in omega-3 fatty acids (including alpha-linolenic acid) lower blood pressure significantly in people with hypertension.

Arthritis

Several studies suggest that omega-3 fatty acid supplements may help reduce tenderness in joints, decrease morning stiffness, and improve mobility. Omega-3s may also help relieve inflammation, although research evidence has been mixed.

Asthma

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Preliminary research suggests that omega-3 fatty acid supplements (particularly perilla seed oil, which is rich in alpha-linolenic acid) may decrease inflammation and improve lung function in adults with asthma.

Breast Cancer Prevention

Women who regularly eat foods rich in omega-3 fatty acids over many years may be less likely to develop breast cancer and to die from the disease than women who do not follow such a diet. This is particularly true among women who consume fish instead of meat.

Inflammatory Bowel Disease (IBD)

Some people with Crohn's disease, a type of IBD, have low levels of omega-3 fatty acids in their bodies. Evidence suggests that fish oil supplements containing omega-3 fatty acids may reduce symptoms of CD and ulcerative colitis (another inflammatory bowel disease), particularly if used in addition to prescription medication. Preliminary animal studies suggest that alpha-linolenic acid may actually be more effective than EPA and DHA found in fish oil supplements, but further studies in humans are needed to be sure.

Depression

People who do not get enough omega-3 fatty acids in their diet may be at an increased risk for depression. The omega-3 fatty acids are important components of nerve cell membranes. They help nerve cells communicate with each other, which is essential in maintaining good mental health.

Menstrual Pain

In a study of nearly 200 Danish women, those with the most omega-3 fatty acids in their diets had the mildest symptoms during menstruation.

Other Uses

Although further research is needed, preliminary evidence suggests that omega-3 fatty acids may also help protect against some infections and treat a variety of conditions, including ulcers, attention deficit/hyperactivity disorder (ADHD), preterm labor, emphysema, psoriasis, and glaucoma.

Dietary Sources:

Dietary sources of alpha-linolenic acid include flaxseeds, flaxseed oil, canola (rapeseed) oil, soybeans and soybean oil, pumpkin seeds and pumpkin seed oil, perilla seed oil, tofu, walnuts and walnut oil.

Available Forms:

There are two types of commercial alpha-linolenic acid preparations: cooking oils (including canola oil and soybean oil) and medicinal oils (including flaxseed oil and dietary supplements containing flaxseed oil).

Some manufacturing methods can destroy the nutrient value of products that contain alpha-linolenic acid by exposing them to air, heat, or light. Generally, high-quality oil is bottled in light-resistant containers, refrigerated, and marked with an expiration date. All sources of omega-3 fatty acids are best kept refrigerated.

How to Take It:

The recommended adequate intake of alpha-linolenic acid in the diet is listed below:

Pediatric

- Infants who are breastfed should receive sufficient amounts of alpha-linolenic acid if the mother has an adequate diet.
- Infant formula should contain 1.5% alpha-linolenic acid.
- Children should not need supplements.

Adult

- 1 - 2 g per day

Amounts of alpha-linolenic acid in oils and foods vary. Flaxseeds have about 2.2 g per Tbsp.; canola oil, 1.3 g per Tbsp.; flaxseed oil, 8.5 g per Tbsp.; English walnuts, .7 g per Tbsp.

Precautions:

Because of the potential for side effects and interactions with medications, dietary supplements should be taken only under the supervision of a knowledgeable health care provider.

Because of the risk of increased bleeding, you should stop taking omega-3 fatty acid supplements before surgery and tell your surgeon that you have been taking the supplements.

People with diabetes or schizophrenia may lack the ability to convert alpha-linolenic acid to EPA and DHA, the forms more readily used in the body. They should get omega-3 fatty acids from dietary sources rich in EPA and DHA.

Although studies have found that regular consumption of fish (which includes the omega-3 fatty acids EPA and DHA) may reduce the risk of macular degeneration, a recent study including two large groups of men and women found that diets rich in alpha-linolenic acid may substantially increase the risk of this disease. Until more is known, people with macular degeneration may want to obtain omega-3 fatty acids from sources of EPA and DHA, rather than alpha-linolenic acid.

Similarly, fish and fish oil may protect against prostate cancer, but alpha-linolenic acid may be associated with increased risk of prostate cancer in men. More research is needed.

Possible Interactions:

If you are being treated with any of the following medications, you should not use alpha-linolenic acid without first talking to your health care provider.

Blood-thinning Medications -- Omega-3 fatty acids may increase the blood-thinning effects of warfarin (Coumadin), aspirin, or other blood-thinning medications, leading to the risk of increased bleeding. They should only be taken together under your doctor's supervision.

Cholesterol-lowering Medications -- Increasing the amount of omega-3 fatty acids in your diet may help a group of cholesterol-lowering medications known as statins work more effectively. Statins include:

- Atorvastatin (Lipitor)
 - Rosuvastatin (Crestor)
 - Fluvastatin (Lescol)
 - Lovastatin (Mevacor)
 - Simvastatin (Zocor)
 - Pravastatin (Pravachol)
- Reviewed last on: 6/25/2007
- Steven D. Ehrlich, N.M.D., private practice specializing in complementary and alternative medicine, Phoenix, AZ. Review provided by VeriMed Healthcare Network.

Supporting Research

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