

Alpha-Linolenic Acid

COMMON NAME: ALA omega-3

SCIENTIFIC NAME: ALA, 18:3 n-3

RECOMMENDED WITH CAUTION

LEVELS OF EVIDENCE



Recommended:

Several well-designed studies in humans have shown positive benefit. Our team is confident about its therapeutic potential.



Recommended with Caution:

Preliminary studies suggest some benefit. Future trials are needed before we can make a stronger recommendation.



Not Recommended - Evidence:

Our team does not recommend this product because clinical trials to date suggest little or no benefit.



Not Recommended - High Risk:

Our team recommends against using this product because clinical trials to date suggest substantial risk greater than the benefit.

Evaluated Benefits

Reduces total cholesterol, LDL cholesterol, and triglycerides

Source

Dietary alpha-linolenic acid is found primarily in vegetable oils, such as flaxseed (linseed) oil and canola (rapeseed) oil. Walnuts are the only edible nuts with significant amounts of alpha-linolenic acid. Alpha-linolenic acid is found in smaller amounts in green leafy vegetables and chocolate. ALA is an essential fatty acid that must be consumed for you to have any in your body.

Indications/Population

Lowering of LDL cholesterol/hyperlipidemia and metabolic syndrome

Mechanism of Action

It may increase insulin sensitivity directly, or decrease hepatic fat storage. Some (2–15%) is converted to eicosapentaenoic acid (EPA), and less (<2%) to docosahexaenoic acid (DHA). The effects of ALA on serum lipids were, for the most part, not consistent with that reported for the very long-chain omega-3 fatty acids, EPA and DHA. It is likely that the limited capacity of humans to elongate and desaturate ALA to EPA, even when ALA is fed at high levels, accounts for this inconsistency.

Hepatic production of the key triglyceride-rich lipoprotein, very low-density lipoprotein (VLDL), is reduced due to suppression of synthesis of apolipoprotein B and triglycerides. Oxidation of fatty acids in the liver is accelerated, reducing their incorporation into triglycerides, and pathways of triglyceride synthesis are suppressed.

An ALA-enriched diet induced serum cholesterol-lowering effects and cardioprotective effects through the anti-inflammatory activities of inhibiting IL-6, IL-1B, and TNF-a in hypercholesterolemic patients. ALA may also repress the activity of mRNA expression and of HMG-CoA reductase.

Side Effects

Weight gain if high amounts are consumed without decreasing other calories consumed

Dosing

Consumption of 2–3 grams per day of ALA reduces the risk of CHD in primary and secondary prevention studies.

Drug Interactions/Cautions

Alpha-linolenic acid from dairy and meat sources has been positively associated with prostate cancer. Alpha-linolenic acid from plant sources, such as flaxseed, doesn't seem to affect prostate cancer risk. Longer-chain omega-3 fatty acids (DHA) in fish oils are associated with a decreased risk of total and advanced prostate cancer. Tell men not to be concerned about moderate dietary intake of alpha-linolenic acid (e.g., canola oil, walnuts, and flaxseed oil), especially if this replaces intake of oils rich in omega-6 fatty acids.

Notes

In 2008, the National Heart Foundation of Australia (NHFA) position statement on omega-3 long-chain polyunsaturated fatty acids (LCPUFA) recommended Australian adults should consume 500 mg combined DHA and EPA and 2 grams alpha linolenic acid (ALA) per day for primary prevention of cardiovascular disease, 1,000 mg EPA/DHA and 2 grams ALA per day for secondary prevention, and 1–4 grams EPA/DHA per day for treatment of hypertriglyceridemia.

Estrogen is the cause of the higher conversion of ALA to EPA or DHA in women rather than in men. Aging is a factor of decreasing DHA synthesis from the reduced-plasma ALA.

References

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