Docosahexaenoic Acid

Also known as: DHA

What does it do? Omega-3 oil, such as docosahexaenoic acid (DHA), belongs to the class of nutrients called essential fatty acids. DHA has been shown to reduce levels of blood triglycerides. High triglycerides are linked with heart disease in most, but not all, research. DHA alone appears to be just as effective as fish oils (which contain both DHA and EPA) in beneficially lowering triglyceride levels in individuals at risk for heart disease.1 In part, this may be because some DHA converts to EPA in the body.2 Unlike EPA, however, DHA may not reduce excessive blood clotting.3

DHA is essential for normal visual and neurological (nervous system) development in infants.4 5 Double blind evidence links DHA supplementation in premature infants to better brain functioning.6 The effects of DHA on the nervous system may well extend beyond infancy. Young adults given 1.5–1.8 g DHA per day showed less evidence of aggression in response to mental stress compared with people in the control group in a double blind trial.7

Where is it found? Cold-water fish, such as mackerel, salmon, herring, sardines, black cod, anchovies, and albacore tuna, are rich sources of DHA and EPA. Similarly, cod liver oil contains large amounts of DHA and EPA. However, due to its very high levels of vitamin A and
vitamin D, cod liver oil should not be taken by women who are or who could become pregnant before consulting a nutritionally oriented doctor. Other adults should make sure the cod liver oil taken (plus other supplements) does not contain more than 25,000 IU (7,500 mcg) per day of vitamin A or 800 IU of vitamin D per day without consulting a nutritionally oriented doctor. Certain microalgae contain DHA and are used as a vegetarian source of this nutrient in some supplements. Most fish oil supplements contain 12% DHA.

**Who is likely to be deficient?** Premature infants who are not breast-fed are often DHA deficient.8 A link has appeared between DHA deficiency and Alzheimer’s disease; however, no evidence at this time indicates that supplementation with DHA will help Alzheimer’s patients.9 Similarly, preliminary evidence shows that children with attention deficit disorder (ADD) have low DHA levels; however, no evidence demonstrates that DHA supplementation improves ADD.10 Many nutritionally oriented doctors believe that the diets of most people eating a Western diet do not provide optimal amounts of omega-3 oil.

**How much is usually taken?** Most healthy people do not supplement fish oil containing DHA or vegetarian sources of DHA. The level of DHA given premature infants who are not breast-fed should be determined by a pediatrician. Much of the research in adults has been based on 1–3 grams per day of DHA from fish oil, although higher levels
have been taken when isolated DHA from microalgae sources is used.

**Are there any side effects or interactions?** While those with heart disease and diabetes often benefit from fish oil (the primary source of DHA in the diet),11 12 such individuals should check with their nutritionally oriented doctor before taking more than 3 or 4 grams of fish oil for several months. Elevations in blood sugar have sometimes been reported,13 though this may simply be due to small increases in weight resulting from high dietary fish oil.14 While DHA combined with EPA from fish oil consistently lowers triglycerides, it occasionally increases LDL cholesterol.15

Fish oil is easily damaged by oxygen, so small amounts of vitamin E are often included in fish oil supplements.16 Nutritionally oriented doctors often recommend that people who supplement with fish oil or DHA take vitamin E supplements to protect EPA and DHA within the body from oxidative damage. Some evidence indicates that vitamin E may be protective against oxidative damage caused by fish oil.17 However, animal researchers have reported that the oxidative damage caused by DHA alone was not prevented with vitamin E supplementation.18 The level of oxidative damage caused by DHA has not been shown to result in significant health problems.

Some evidence suggests that adding vitamin E to EPA/DHA may prevent this fish oil-induced increase in serum glucose.19 Similarly, the impairment of glucose
tolerance sometimes caused by the omega-3 oil has been prevented by the addition of half an hour of moderate exercise three times a week.20 The effect of DHA by itself on glucose levels has not been adequately studied.

People who take fish oil containing EPA and DHA and who also take 15 grams of pectin per day have been reported to have reductions in LDL cholesterol.21 This suggests that pectin may overcome the occasional problem of increased LDL cholesterol from fish oil supplementation. The LDL cholesterol-raising effect of EPA and DHA may also be successfully prevented by taking garlic supplements (or presumably adding garlic to the diet) along with EPA and DHA.22 Adding pectin or garlic when people supplement DHA by itself has yet to be studied.

References: