

Essential Fats for Child Brain Development

DHA: IMPORTANT DURING PREGNANCY AND LACTATION

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One of the most striking discoveries in recent years is the finding that the omega-3 fatty acid known as DHA (docosahexaenoic acid) is required for optimal brain development during fetal and early infant life. In fact, failure for women to establish adequate DHA nutritional status has been strongly implicated in impaired brain development of their offspring, manifesting as lower IQ and an increased propensity for learning disabilities. The problem stems from the fact that the fetus is dependent upon the mother's body for much of its DHA requirement. After birth, infants continue to require DHA from breast milk during the first three months of life in order for optimal brain development to continue.

From a biochemical standpoint, the developing fetus can synthesize some DHA from the elongation and further desaturation of alpha-linolenic acid (ALA), which is richly supplied by flaxseed oil, and eicosapentaenoic acid (EPA), which is richly supplied by fish and fish oil. However, the fetal body and the infant body (for at least the first three months of life) are incapable of synthesizing sufficient DHA to satisfy their needs for optimal brain development. Thus, it is imperative for women to ingest preformed DHA prior to becoming pregnant, during pregnancy and during their child's first three months of life (assuming they are breast-feeding) in order to provide their children with the best opportunity to achieve ideal brain development and function.

Unfortunately, most women do not ingest sufficient amounts of DHA and there is no way to compensate once this critical time period has elapsed. Feeding the child DHA does not substantially affect brain development to the degree possible during pregnancy and the first three months of life.

Most women are not aware of the link between DHA and brain development. Thus, primary health care practitioners should alert female patients who are in their childbearing years as to the importance of regularly consuming fish (two servings per week) as well as taking an essential fatty acid supplement daily (my preference is an all-in-one that contains flaxseed, fish and borage seed oil).

What the Studies Show About DHA and Brain Development

As stated above, DHA is an omega-3 fatty acid found in many fish, as well as in supplements that contain fish oil. The body can also synthesize DHA from ALA and EPA. Studies show that higher concentrations of DHA provided to the fetus and infant are associated with higher IQ scores throughout life (about six points higher on average). In addition, studies show that the first-born child generally has a higher IQ than the children that follow. This has been attributed to the fact that the first-born child gets the benefit of acquiring the DHA the woman has accumulated in her tissues over her lifetime, followed by additional DHA that is available from her breast milk.

Unless the woman adheres to a very aggressive omega-3 fat replenishment program from food and supplements, her subsequent children are much less likely to be afforded access to the same concentration of available DHA as that supplied to the first-born child. The trend is that the first-born

child has a higher IQ and is less likely to manifest learning disabilities than their younger siblings.

The Brain Is Largely Made of Fats

None of this should be such a surprise to us when you consider that most of the dry weight of the brain is lipid (fat). This is related to the fact that brain activity depends greatly upon the functions provided by its outer, fatty waxy membrane to act as an electrical nerve-conduction cable. Compared to other body tissues, the brain content of DHA is very high. Thus, the developing brain has a very high need for DHA, which must be provided from the mother's body.

The greatest dependence on dietary DHA occurs in the fetus during the "last third of pregnancy" and to a lesser extent in the infant during the first three months after birth. It is during this period that brain synapses are forming most rapidly, and an infant's demand for DHA exceeds the capacity of the enzymes to synthesize it. As such, the fetus extracts DHA provided by the placenta during its development. After delivery, the infant is reliant upon the amounts of DHA available in breast milk in order to optimize development of brain structure and function. In fact, the increase in brain size during the final three months of pregnancy is threefold, and this rapid growth in brain development requires appreciable amounts of DHA. (Of note is the fact that DHA is also required for vision.)

Recent Studies Provide Support for the DHA Story

Recent support for the idea that DHA is critical for brain development comes courtesy of an experiment that studied the effects of adding DHA (in the form of fish oil) to infant formula. At 16 and 30 weeks of age, breast-fed and supplement-fed infants showed significantly better visual acuity than infants fed placebo formula.

In another study, researchers in Norway examining the effects of DHA on mental development found that children whose mothers had a higher intake of DHA during pregnancy scored higher on intelligence and achievement tests at 4 years of age than children whose mothers took a supplement not containing DHA.

What Should Women of Childbearing Years Do?

The best advice is for women to consume fish twice per week during their entire adult life. This practice is good for the mother's brain and helps enrich the body with DHA to support brain development in future children. Along with EPA, the other omega-3 fat in fish, these two essential fats are linked to reducing the risk of Alzheimer's disease and other forms of dementia in the adult brain as one ages, according to a number of recent reports. Of course, omega-3 fats also reduce risk of heart disease and cancer.

Eating more than two servings of fish per week, however, is not advisable because of the risk of mercury toxicity and other contaminants associated with fish consumption. Yet further intake of omega-3 fats is desirable. As such, I recommend adult women (and men) take a daily supplement that contains a combination of fish oil, flaxseed oil and borage seed oil. Each capsule should contain 400 mg of each of these oils. I suggest taking three capsules per day for general health maintenance and disease protection.

For women of childbearing age, taking an essential oils supplement is of the utmost importance. The additional EPA, DHA and ALA acquired from this supplement is a highly efficient way to help women

saturate their tissues with DHA prior to their first pregnancy, and to replenish their tissues with DHA between pregnancies, so all of their children have access to the levels of DHA required for their optimal brain development. In many cases, doctors now instruct women to take an essential oils supplement during the breast-feeding stage. Until recently, many doctors only recommended a prenatal vitamin and mineral supplement.

The great thing about using a well-designed essential oils supplement is that it does not contain any mercury or contaminants, but rather is a purified oil product that delivers all of the good stuff without risk for heavy-metal or other toxicities developing. However, use of cod liver oil or any liver oil supplement is not advised, as the liver is often a place where contaminants concentrate, cholesterol is synthesized, and vitamin A and D may concentrate to levels that can produce toxicity states in certain individuals as well as in the fetal body.

We know that high levels of vitamin A intake by women lead to congenital malformations in their children. Thus, my suggestion is that you recommend a supplement containing flaxseed, fish and borage seed oil, instead of cod liver oil and the like.

I sincerely hope you will share this important information with your patients. A great deal is riding on it.

Resources

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