DHA: An Essential Fat for a Child's Brain Development During Pregnancy and Lactation -
"Unfortunately most women don't ingest enough to pass along"

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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 to continue.

From a biochemical standpoint the developing fetus can synthesize some DHA from the elongation and further desaturation of the alpha-linolenic acid (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 optimal brain development and function. Unfortunately, most women do not ingest sufficient amounts of DHA to provide their offspring with the best chance of establishing optimal brain development and function. And there is no way to compensate for this once this critical time (pregnancy and the first three months of lactation) have elapsed. Feeding the child DHA after this critical time period cannot substantially affect brain development to the degree that is possible during pregnancy and the first three months of life.

Most women are not aware of the link between DHA and brain development and thus, primary health care practitioners should alert their female patients, who are in their child-bearing years, as to the importance of regularly consuming fish (2 servings per week) as well as taking an essential fatty acid supplement daily (my preference is one that contains flaxseed, fish and borage seed oil – all in one).

What the Studies Show about DHA and Brain Development

As stated above, DHA is an omega-3 fatty acid that is found in many fish as well as supplements that contain fish oil. The body can also synthesize DHA from alpha-linolenic acid, an omega-3 fat found in high concentrations in flaxseed oil, and from EPA, another omega-3 fat found in fish and fish oil.

In recent years we have learned that DHA is extremely important to brain development during fetus life and during the breast-feeding stage of early life. In fact, studies show that higher concentrations of DHA provided to the fetus and infant is associated with higher IQ scores throughout life (about 6 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 up to that point, 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, all of her subsequent children are much less likely to be afforded access to the same concentration of available DHA that was supplied to the first born child.

As such, in most cases the children who are not the first-born are provided with lower amounts of DHA than was their oldest sibling, and as a result their brain development does not reach the same degree of optimization. That is what the overall body of evidence is suggesting at this time. The trend is that the first-born child has a higher IQ and is less likely to manifest learning disabilities, compared to children who are not the first-born, of any particular woman.

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 young 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 3 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, and after delivery, 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. Failure to provide DHA during this critical period and/or during the first 3-months of breast feeding is associated with learning disabilities and lower IQ scores. Of note is the fact that DHA is also required for vision as well

A Couple of Recent Studies Bolster the DHA Story

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

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 four years of age than those children whose mothers took a supplement not containing DHA.

So What Should Women of Child-Bearing Years Do?

The best advice is to consume fish twice per week during their entire adult life. This practice not only helps enrich your body with DHA to support brain development in their future children, but DHA is also needed for the adult brain of the mother as well. So, we all stand to benefit from the practice. 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 that adult women (and men) take a daily supplement each day that contains a combination of fish oil, flaxseed oil and borage seed oil. Each capsule should

contain 400 mg of each of these oils, and I suggest that you do what I do - “take 3 capsules per day for general health maintenance and disease protection”.

For women of child-bearing 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 saturate their tissues with DHA prior to their first pregnancy, and to replenish their tissues with DHA between pregnancies, so that 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 Vitamin D levels may concentrate to levels that can produce toxicity states in certain individuals and 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 hope you will share this very important information with your patients. A great deal is riding on it.

For more information on this or other related topics, visit Dr. Meschino’s website at: http://www.renaisante.com

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