



FATS for maximum **BRAIN POTENTIAL**

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AT NO OTHER TIME OF LIFE IS NUTRITION AS IMPORTANT AS DURING PREGNANCY. PREGNANCY IS A TIME OF GREAT CHANGE AND GROWTH FOR THE DEVELOPING FETUS AS WELL AS THE MOTHER. EVERYTHING THE MOTHER PUTS INTO HER BODY PROVIDES THE BUILDING BLOCKS FOR THE CHILD'S BODY AND MIND.

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An essential piece to the pregnancy nutrition puzzle is the proper fats. Fats are very important in everyone's diet but especially so for the developing fetus. Fats are the main building block of the brain and nervous system. In fact, more than 60 percent of the dry weight of the brain is fat. The fats in the nervous system are required for insulation of the nerves to preserve messages and for connections between the nerves allowing information to be exchanged ⁽¹⁾. Deficiencies in the proper fats contribute to many disorders such as tremors, learning problems, numbness, developmental delays, seizures, strokes, and autism. On the other hand, proper amounts of the "good" fats can help both mom and baby reach their fullest potential.

First of all, there is a major difference between different types of fats. The most harmful fats you can put into your body, pregnant or not, are trans unsaturated fats. Trans fats are those unsaturated fats which have been heated to change the bonds in the structure. Trans fats tend to be solids at room temperature. The reason trans fats are so harmful is because of their bond structure. Trans fats cause our cells to become rigid and inflexible. This means our nerves have a more difficult time passing information from one nerve to the next. Unfortunately, you find trans fats in almost every package on the grocery store shelf and in every fried food. Included in this group of foods loaded with trans fats are our kids' favorites, french fries. Almost every cracker, cookie, and cereal you pick up has at least one ingredient listed as fractionated or hydrogenated oil, denoting a trans fat. Trans fats help retain the shelf life for foods, give crackers their crispiness, and moistness to cakes. According to the FDA, there is no safe level for trans fats as they are so damaging to the body. Trans fats

are also major contributors to clogged arteries, coronary dysfunction, and diabetes. Especially when pregnant, trans fats do not provide strong building blocks for a developing fetal brain and nervous system.

The best choice of fat to build a strong fetal nervous system and brain are omega 3 polyunsaturated fats such as docosahexaenoic acid also known as DHA and eicosapentaenoic acid known as EPA. DHA and EPA are long chain fats essential for growth and function of the brain in the fetus and infants ⁽²⁾. DHA is the

heaviest hitter contributing to improved learning ability due to proper brain function. Taking in the correct amount of the omega 3 essential fatty acids allows our brain to function at a higher level by ensuring accurate and rapid communication between nerve cells. On the other hand, a deficiency in the omega 3 polyunsaturated fats can adversely affect learning, behavior, visual acuity, and retinal function in infants ⁽³⁾.

Throughout pregnancy, maternal fatty acid blood levels drop. This results from the growing infant's need for the fatty acids to build developing brain tissue. The only way the developing fetus gets the long-chain fatty acids necessary to properly develop the neural tissue is from the mother. This leaves the mother with depleted stores of essential fatty acids for her own nervous system health. When her system is depleted of these fatty acids, they are not easy to replenish. As a result of this, with each pregnancy, DHA supplies in mother and, therefore, baby, are decreased ⁽⁴⁾. Mothers with low fatty acid levels have been shown to have higher levels of postpartum depression because of the difficulty the nerves have to pass accurate messages. Because of this, it becomes even more important for mom to supplement her EPA and DHA intake during



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pregnancy, particularly in the 3rd trimester when fetal brain development is most rapid and proficient ⁽⁵⁾.

Our bodies are unable to efficiently synthesize the long chain polyunsaturated fats such as DHA and EPA needed for fetal and maternal health. Therefore, pregnant mothers must take in the omega 3 essential fatty acids from the diet. The omega 3's EPA and DHA are not found in a multitude of sources. Essentially they are found in deep water fish such as mackerel, sardines, and salmon. Fish, much like humans, have a hard time synthesizing the beneficial fatty acids. Therefore, deep-water fish eat algae which are very good at carrying the omega 3 fatty acids we all need. So from algae to fish to pregnant moms to the fetus and finally to the developing nervous system the very important omega 3s are utilized. Unfortunately, there is a problem with this chain of life-pollution. Pollutions such as PCBs and mercury are found in high levels in those same deep-water fish. These pollutants have been shown to have detrimental effects on the fetus ⁽⁶⁾. Because of the pollutants

in the deep water fish, a safer way to take in the omega 3s are in supplement form. When looking for an omega 3 supplement, one needs to find pharmaceutical-grade. This denotes the highest level of purity attainable in these supplements avoiding damaging mercury and PCBs as much as possible.

The rapid fetal brain development continues from the last term of pregnancy into the first 12 months of the infant's life. Given this, the need for long chain fatty acid supplementation in the infant remains high. The infant most obviously must receive these long chain fatty acids in one of two ways—breastfeeding from a mother who is supplemented or from a formula fortified with the DHA/EPA complex. Breastmilk is the best



choice for the infant as it provides for the easiest digestion and absorption of the fatty acids. Until recently, formulas were not supplemented with the very important long chain polyunsaturated fatty acids. Due to recent studies on brain development and the IQ advantages supplemented children have over non-supplemented, the larger formula manufacturers decided to include the polyunsaturated fatty acids into their formulas. There are several conditions associated with deficiencies in DHA such as impaired vision, reduced IQ, dyslexia, and ADD ⁽²⁾.

Fats, for the longest time, have been thought of as the evils of diets. There are fats which cause more damage than good to our bodies, the worst of these harmful fats are trans polyunsaturated fats. However, people of all ages, from fetus to elderly, need fats to build the brain and nervous system. The fats we take in have a major effect on how well our nervous system functions. The most beneficial fats are omega-3 polyunsaturated essential fatty acids more commonly known as DHA and EPA.

These fatty heavy hitters have been shown to enhance brain development and functions in children. By limiting trans fat intake and enhancing omega-3 consumption during pregnancy and beyond women can give our children the best opportunity for optimum brain and nervous system function.

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References can be found on-line at www.icpa4kids.org/research/references.htm