

# ***Mind Your Omega 3's***

By Karlene Karst, B.Sc. R.D.

## **The Story of the "Fat Head"**

The human brain is more than 60% fat! The majority of fat in the brain is the type that cannot be made by the body, but must be supplied by the diet. The fats essential for optimal brain activity are the omega 3 fatty acids: eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), and, to a lesser extent, alpha linolenic acid (ALA). The omega 3 fatty acids have beneficial properties that have been studied in the treatment of a number of mental conditions ranging from depression and bipolar disorder to schizophrenia, alzheimers, chronic fatigue syndrome and stress.

## **Building a Healthy Brain**

Today's society is relatively deficient in these powerful brain building omega 3 fatty acids. Gone are the days of eating simple diets full of fish, seeds and nuts; our diets are now full of processed foods that are lacking in the good, essential fats. To ensure you are receiving sufficient quantities of omega 3 fatty acids, fatty, cold water fish, such as salmon, mackeral, tuna, sardines and anchovies should fill your plate, as well as other valuable omega 3 sources derived from oil-bearing nuts and seeds, such as flaxseed and flax oil.

The brain requires more omega 3 fatty acids than any other system in the body. With sufficient quantities of EPA and DHA in the diet, the membranes of the brain perform at their peak level, which is essential for regulating mood, emotions, and staving off depression. In the absence of EPA and DHA the brain will choose an alternate source of lipids such as an omega 6 or monounsaturated fat which has very different properties from omega 3s and could therefore negatively affect your mental health.

## **Stress Relief**

We live in a hectic environment, one full of numerous responsibilities and stresses. Careers, family, illness, aging parents, and finances can all seem overwhelming. Too often the stresses of everyday life build up, leaving us feeling helpless, and can actually lead to destruction or depression. While a certain level of stress has been shown to be essential to survival, too much is not healthy. Preliminary research shows a relationship between an omega 3 fatty acid deficiency and stress.

Prolonged stress has been linked to problems such as hypertension, heart disease, fatigue, and gastrointestinal disturbances, as well as emotional impairment. Research shows that essential fatty acids may be able to reduce several symptoms of stress and minimize the damage caused by high levels of stress hormones.

In one study Dr. Hamazaki of Toyama University in Japan studied normal students under stress. Hamazaki provided medical students with 1.5 to 1.8 g of DHA or a soybean placebo capsule for three months prior to university exams. At the beginning of the study and again at the end he measured the participants' levels of hostility by presenting to them potentially emotionally charged cartoon illustrations of various human interactions that had empty bubbles for each person to write in.<sup>6</sup> There was a much higher rate of hostile and aggressive dialogue in the nineteen medical students who received the placebo during the high-stress period as compared to the twenty-two medical students receiving the fish oil supplements. The rating of the students' hostility jumped 58% in the placebo group but did not change at all in the omega-3 group.

Many other studies are being done with omega-3 fatty acids in reference to stress, and evidence of their benefits for stress is continually being reinforced.

### **Fighting Depression**

Depression is more than just sadness or "feeling blue." Depression is a medical illness classified as a biological disorder of the brain with psychological, social and even spiritual causes and treatments.<sup>1</sup> Not only those with susceptible genes can be affected by depression, but anyone who has gone through a period of trauma, grief, or abuse can be affected. Researchers have documented a dramatic rise in the rates of major depression. Factors that affect today's society and which may be contributing to the increase in depression include family breakdowns, increased rates of substance abuse, the effects of media and technology and even toxic pollutants in the environment.<sup>1</sup>

So what is the relationship between omega 3s and depression? While researchers are continuing to examine numerous environmental causes, new evidence documents that the steady decline in omega 3 fatty acids in our diet may be a larger factor in the rise of depression. Various population studies link eating large amounts of fish to low rates of major depression.

Dr. Hibbeln, a respected psychiatrist and researcher at the National Institute of Health in Bethesda, Maryland, is a leading expert on omega 3 fatty acids and depression. His one study, which was published in the prestigious journal, *The Lancet*, compared annual rates of depression worldwide with levels of fish consumption.<sup>2</sup> His findings were significant and noted that among nations, Japan, has a high consumption rate of fish and also has the lowest rate of depression at 0.12%. New Zealand has one of the lowest consumption rates of fish and also has the world's highest rate of depression at 6%, some fifty times higher than Japan!<sup>2</sup> Dr. Hibbeln concluded that the differences from country to country could be predicted by how much fish the population ate.

Analysing blood samples of patients with major depression has also helped prove the direct relationship between omega 3 fatty acids, depression and hostility. In patients hospitalized for major depression, the ratio of omega 6:3 was strongly positively correlated with the severity of depression. In other words, the lower the omega 3 content in the diet the greater the severity of depression.<sup>3</sup>

In a recent study involving 20 people with recurrent depression, researchers studied the effects of EPA on their symptoms. Patients received either a fish oil capsule or a placebo pill in addition to the antidepressant medication they were already taking. After four weeks, six out of ten patients receiving EPA and only one out of ten receiving the placebo had significantly reduced symptoms of depression.<sup>4</sup> Patients' symptoms of depressed mood, insomnia and feelings of guilt and worthlessness had all significantly improved by week four with EPA treatment, and those on the placebo remained in their depressed state despite the antidepressant medication.

Research continues in this area to try and pinpoint the mechanisms involved in the antidepressant actions of omega 3s. The potential for using omega 3s as antidepressants is significant and new antidepressant drug treatment using omega 3s as one of the ingredients could be on the market within the next few years.

## **Babies & the Blues**

New mothers require optimal health and nutrition to care for and nurture their babies throughout the gestation stage and after birth. Omega 3 fatty acids are critical for the growth and development of infants as they play a crucial role in brain and eye development.

The saying "eating for two" is definitely applicable when discussing omega 3 fatty acid requirements. Since essential fatty acids cannot be manufactured by the body, the fetus requires an ongoing supply from the mother. EPA and DHA are critical for fetal growth as 70% of brain cell development takes place during gestation, and the fatty acids can only be passed from mother to fetus through the placenta.<sup>7</sup> If the pregnant woman is depleted of omega 3s before pregnancy, neither the mother nor developing baby will have adequate levels of omega 3s for normal fetal development.

A recent study published in the *American Journal of Clinical Nutrition* found that pregnant women who ate more fish gave their babies a better chance of mature brain development.<sup>5</sup> The study also found that mothers with more DHA in their blood had babies with better sleep patterns in the first 48 hours following delivery compared to those whose mothers consumed less fish.<sup>5</sup> The omega 3 fatty acid DHA, along with an omega 6 fatty acid called arachidonic acid (AA), are the key building blocks to healthy brains and eye development.

A sufficient supply of omega-3s is not only crucial for the baby during the gestation stage, but also for the mother, herself. After giving birth, the mother is often left

depleted of omega-3 fatty acids, and numerous health problems may result. For example, new, ongoing research finds women with low levels of DHA may be at an increased risk of developing a condition known as postpartum blues or postpartum depression.

### **Omega 3s as Baby Fuel**

While omega 3 fatty acids are critical for the development of a healthy fetus, they are equally important as the infant grows and matures. Human breast milk contains 50% fat, which is the fuel for the tremendous growth rate of newborn infants.<sup>1</sup> While breast milk has been known as the “perfect food” for an infant and is a source of essential fatty acids, the proportion of DHA and other omega 3s in breast milk varies from population to population. Numerous studies have found that the content of DHA in mother’s milk depends largely on the type and quantity of food consumed. Research has shown that the breast milk of women living in the United States is deficient in omega 3s in comparison to women in China and Japan.<sup>1</sup> Certain dietary changes or supplementation with an omega 3 source may be necessary for breast feeding women to ensure their babies are receiving adequate quantities of DHA.

While breast feeding women can provide their babies with omega 3 fatty acids, other women who choose not to breast feed, or are unable to, must rely on infant formulas to provide their babies with the necessary nutrients. Infant formulas fortified with omega 3 fatty acids are available in approximately sixty countries world wide, including throughout Europe and Asia. Unfortunately, in Canada and the U.S., very few omega 3 formulas exist despite overwhelming evidence of their nutritional value to an infant’s health and wellbeing.<sup>1</sup> As more infant formula companies begin to recognise the importance of omega 3 fatty acids, there is hope that more formulas fortified with omega 3s will be made commercially available.

While the long term consequences of inadequate levels of omega 3s are not completely understood, research supports infants who are lacking in omega 3s have decreased visual acuity and are at greater risk for developing attention deficit disorder and depression later on in life.

### **Omega-3 Recommendations**

While consuming a fatty type of wild fish like salmon, mackerel or tuna twice a week is important, it may not be enough to provide you with the essential fatty acids your body needs to protect your mental health. It would be very difficult to obtain high amounts of omega 3s just from eating fish. It would take between six and 32 cans of tuna per day to achieve the omega 3 dosages used in some clinical trials. Also, if you are pregnant, it is recommended that you limit your intake of tuna to no more than five ounces per week and to stay away from swordfish, shark, king

mackerel, fresh tuna and snapper in order to avoid ingesting mercury and other heavy metal and environmental contaminants.

To ensure you are receiving adequate levels of omega 3s, taking a high quality fish oil supplement is recommended. If you are using omega 3 fatty acids for general health, mood or cognitive enhancement, 1 to 2 grams daily of total omega 3 fatty acids (EPA plus DHA) is adequate.<sup>1</sup> If you are using omega 3s to treat depression, higher amounts may be required. Pregnant women who are wishing to supplement with omega 3s should work with their health care provider to determine a correct dosage.

Flaxseed, walnut and perilla seed are plant based sources of omega 3 fatty acids that contain high concentrations of ALA. Some ALA can be converted in our bodies to EPA and DHA, although the exact rate of conversion is not known. It is therefore beneficial to supplement with a fish oil source to ensure optimal levels of EPA and DHA are obtained. Flaxseed and perilla are great options for vegetarians requiring a plant based omega 3 source, as well as for those individuals with an allergy or are unable to tolerate fish supplementation. ALA has many independent health benefits of its own including cardiovascular protection and immune system enhancement. Although ALA has not been studied by itself in the treatment and prevention of mental disorders, eating foods containing or supplementing with ALA is more beneficial than not receiving any omega 3 fatty acids at all.

### **Safety of Omega 3s**

While major side effects have not occurred during the numerous research studies that have been conducted using omega 3 oils, some minor side effects have been noted after supplementation. Gastrointestinal side effects which may include nausea and diarrhea are the most common however they are very dependent on the dosage used. A high dose of any oil can cause gastrointestinal side effects. To minimize the chance of these side effects, start with a smaller dose and gradually increase over a few days, taking the omega 3 oils with meals. Side effects are very individual and while one person can take large doses with no side effects, another may react to even small doses.

Omega 3 fatty acids can be taken with other medications, unless you are taking blood thinners, such as aspirin, ibuprofen or warfarin. In this instance, one should avoid high doses of omega 3s as they may increase the risk of bleeding. Before you start supplementing with omega 3s, and particularly if you are using pharmaceutical drugs, it is recommended that you first consult with your health care practitioner.

### **The Omega 3 Alternative**

In today's society many of us are taking control of our own health and searching for alternative options to the allopathic remedies that are currently prescribed. Safety

issues, long term side effects and the desire to find alternatives to synthetically produced chemicals are among a few of the reasons many are turning to “natural” treatment options. As research continues to show the importance and efficacy of omega 3 fatty acids in the prevention and treatment of a variety of mental conditions, the current habit of prescribing and taking antidepressants may decrease in the coming years. Remember to mind your omega 3s and stay healthy!

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