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Attention-Getters: EFAs and ADD/ADHD

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ADD/ADHD – The Disorder

The sound of a pencil hitting the floor across the room. The humming of florescent lights. A bird flying outside the window. Many of us take these sights and sounds for granted and can easily ignore them, but to a child with ADHD (Attention Deficit Hyperactivity Disorder) and ADD (Attention Deficit Disorder) they are magnified and can turn into difficult-to-ignore distractions. Every day in our country, children with these disorders face the challenges of trying to overcome "typical" exterior stimuli in order to concentrate in school environments but, in an ironic loop, their decreased ability to stay focused and pay attention adds to the difficulty ADD and ADHD children have in conquering these challenges.

It's a familiar sight in many Canadian schools: children lined up outside of the school nurse's office for their mid-day dose of Ritalin™, the most commonly prescribed drug for ADD/ADHD. It may take up to an hour to take effect, but the tiny tablets are an essential school tool used by thousands of children daily. In the past 10 years, the number of children diagnosed with these attention disorders has grown. It is estimated that ADD/ADHD affect over 1.2 million Canadian children, and these disorders are more commonly diagnosed in boys than girls. Symptoms include lack of focus and concentration, irritability, impulsiveness, forgetfulness and difficulty organizing and completing tasks. Children with these symptoms have a more difficult time staying on task at school and also tend to be more prone to suffering negative social consequences, causing their self esteems to erode. Decades ago, these children were labeled "out of control", "hard to handle" or just plain "bad". Today's research indicates that the disorder is indeed caused by a chemical imbalance in the brain, but the factors causing the imbalance itself are still elusive.

Just Being Kids?

While some parents and teachers think these children are "just being kids" or that they're just in "a phase", the reality is that children with ADD/ADHD are quite different from "high energy" children. To be diagnosed with ADD /ADHD, a child must have a consistent pattern of behavior which has been present for at least six months; the pattern of behavior must have occurred before age 7; and the actions and behaviors must be different than those exhibited by others of the child's age. Doctors use behavioral assessment tests like the Conner's Rating Scale, along with observations from teachers, parents and health care professionals to determine the presence and/or severity of these disorders. Unfortunately, ADHD and ADD may not appear exclusively. Other conditions associated with ADD/ADHD include various types of learning disabilities, depression and mood disorders.

While drugs like methylphenidate (Ritalin™) and dextroamphetamine (Dexedrine™) seem to have a band-aid effect on the symptoms of ADD/ADHD, they are not a cure. The calming effects of these stimulants often wear off within hours and studies to determine the long term effects of such drugs have not been completed. But there is a ray of hope – information and research on more natural alternative treatments are becoming more readily accessible to parents and doctors.

EFAs – The "Good" Fats… And More

Essential fatty acids (EFAs) are essential to our diet and body. Unfortunately, many of us are relatively deficient in these powerful fats. 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. Some signs of EFA deficiencies include dry, scaly skin, thinning hair, fatigue, impaired growth, loss of visual acuity, and increased incidence of disease. Studies have shown a link between a fat imbalance in the brain and development of certain mental conditions such as learning disorders, bipolar disorder, Parkinson's disease and ADD/ADHD, to name a few. Research supports that EFA supplementation into diets of ADD/ADHD children has appeared to lessen the effects of hyperactivity, aggression and impulsiveness.

There are two main types of EFAs – omega-3s and omega-6s. Recent research shows that omega-3 fatty acids are particularly important for healthy brain function. Omega-3s are present in fatty fish as well as oil-bearing nuts and seeds. Docosahexaenoic acid (DHA), an omega-3 fatty acid, is mainly concentrated in the brain and retina cells. It has been recognized as essential for infant brain development and retinal function. Studies of preterm infants have shown the importance of dietary DHA in learning. DHA has further been shown to play an important role in treating ADD/ADHD. Eicosapentaenoic acid (EPA) also belongs to the omega-3 family and is essential for the production of anti-inflammatory compounds. EPA can be metabolized in the body to DHA. Although DHA and EPA are found primarily in cold water fish such as salmon, sardines, mackerel and tuna, which contain the highest naturally occurring concentrations of DHA, fish oil supplements are also readily available in health food stores.

Another omega-3 fatty acid, alpha-linolenic acid (ALA), is found in high quantities in flax seed and flax seed oil. ALA is the parent omega-3 and precursor to EPA and DHA. Experimental studies have shown that ALA supports learning and memory. Small quantities of ALA are metabolized into DHA, providing additional benefits to the brain.

Omega-6 fatty acids, particularly dihomo-gamma linolenic acid (DGLA) and gamma linolenic acid (GLA), the precursor to DGLA, also play an important role in healthy brain function. Hyperactive children have been shown to be deficient in DGLA. Valuable quantities of GLA are found in borage and evening primrose oil, with borage being the richest source, containing 20-24% GLA.

There are other natural products which, although not essential fatty acids, help in the prevention of ADD/ADHD and further complement supplementation with EFAs. For example, supplementation with clove oil has been shown to have beneficial effects on the polyunsaturated fatty acid levels in the brain and retina. DHA levels are significantly increased upon supplementation with clove oil. Eugenol and isoeugenol, the major components of clove oil, have demonstrated potent neuroprotective activity. In Asia, clove oil has been used for many years to stimulate brain function.

As well, vitamin E is an important antioxidant vitamin that protects the cells, including neurons, from oxidative damage. Vitamin E is a valuable additive to any EFA oil, as it helps prevent oxidation of the oil.

ADD/ADHD –The Link to EFAs

It is well known that a diet providing a balance of nutrients is essential for the maintenance of good health. Nutritional deficiencies during the prenatal period and in early childhood may be responsible for the development of ADD/ADHD later in life. Studies have shown a deficiency of EFAs and trace minerals in patients with hyperactivity and ADD. EFAs are an important part of a balanced diet and have been recognized as being essential for the normal growth and functioning of the brain.

EFAs participate in the generation of messenger molecules (neurons) responsible for the action of various hormones and enzymes and have a vital role in cell to cell communication in the brain. With the absence of these fats, neurons "short out" and their communications do not arrive at their intended destination, thus causing symptoms of disorders like ADD/ADHD. EFAs such as DHA may also improve learning by increasing acetylcholine levels in the hippocampus, an area of the brain involved in learning and memory.

Researchers such as L.J. Stevens *et al.* helped establish the link between fatty acid deficiency and behavioral and learning disorders. Some of his research, published in the *American Journal of Clinical Nutrition,* suggested that altered fatty acid metabolism was a key contributor to the nutritional deficiencies they discovered in children with ADHD. In this study 53 participants with ADHD had lower concentrations of EFAs in their blood cells than the 43 controls. In addition, 21 ADHD participants also had many symptoms of fatty acid deficiency associated with lower blood EFA concentrations. The same researchers continued their studies on young boys with learning disorders. They found a greater number of behavioral problems, temper tantrums, learning disorders, and sleep difficulties in the participants with lower total blood omega-3 concentrations. The reason for this EFA deficiency in this group of people is unknown. Some researchers believe that a fatty acid nutritional deficiency and/or a conversion problem may exist among children who have learning disorders such as ADHD and dyslexia.

A recent study by Richardson and Puri, published in *Progress in Neuro Psychopharmacology & Biological Psychiatry* in 2002, studied the effects of EFAs on

ADHD-related symptoms in children with specific learning disabilities (mainly dyslexia). Forty-one children aged 8-12 years with both specific learning difficulties and above average ADHD ratings were randomly allocated to the EFA supplementation group or a placebo for 12 weeks. After 12 weeks of EFA supplementation, significantly lower cognitive and behavioral problems were noted compared to the placebo group. The researchers concluded that EFA supplementation appears to reduce ADHD-related symptoms in children with dyslexia.

Currently, British school children with learning difficulties are taking part in a major trial to see if EFAs from both plant and fish sources can help raise their learning and concentration levels. A total of 120 children aged 6 to 11 with dyslexia, dyspraxia, ADHD and autism are being studied. The researchers feel that the significant dietary changes that have taken place over the last 20 years (reduction of "good" fats in the diet) are responsible for the increase – by as many as four to five times – in the number of children being diagnosed with these conditions. The researchers expect to see a significant improvement in the children's learning abilities following EFA supplementation.

The studies described have shown that there may be some value in providing EFAs to children with ADHD and specific learning disabilities. Further clinical studies are in progress to confirm the value of EFA supplementation for learning disorders.

EFAs – The Answer?

Although the diagnoses of ADD/ADHD are on the rise, it is comforting to know there may be a natural alternative to drug therapy for our children. It is important to choose supplements that contain both omega-3 and omega-6 fatty acids for optimal health benefits. Clinical research has shown improvements with 500 mg of DHA and 200 mg of EPA, but the dosage will depend upon the child's age, size and severity of the disorder. EFA supplementation can be a viable option for some children with these difficult-to-manage disorders. Combating the symptoms of ADD/ADHD gives these children a new lease on life – new hope and the self esteem needed to be successful in today's world.

Please consult your health care provider for additional information on EFAs before beginning a new treatment regime or before discontinuing the use of ADD/ADHD medication.

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