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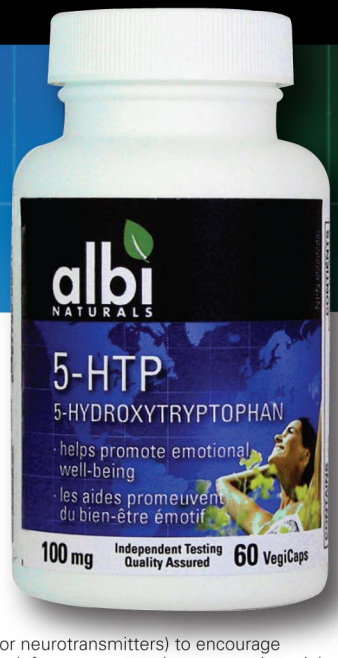
5-HTP

5-HYDROXYTRYPTOPHAN



Solving the Serotonin Dilemma

What do depression, insomnia, anxiety, suicide, migraines, PMS, obsessive/compulsive behavior, stress, obesity, and addiction have in common? All of these conditions are manifestations of low levels of serotonin in the brain. Many of the new prescription drugs, such as Prozac, that have become available since the absence of L-Tryptophan are designed to regulate brain serotonin levels.

What is Tryptophan?

Tryptophan is a naturally occurring amino acid found at low levels in many foods, the highest levels of any food are found in milk and bananas. This amino acid is essential to the human body for the production of serotonin, a brain chemical necessary for sleep and mood regulation. Tryptophan is also the nutrient that the body uses to make melatonin.

A natural and safe alternative to mood and sleep regulating drugs is available in the form of 5-Hydroxy L-Tryptophan (5-HTP). It is a compound synthesized in the body from the amino acid tryptophan which is ten times more active than L-Tryptophan and is the immediate precursor to serotonin (5-Hydroxy typtamine or 5-HT) found in the brain, blood platelets, and duodenal mucosa cells of the gastrointestinal tract. The source of 5-HTP is an extract from a natural plant seed (Grafonia Seed) and not from fermented Tryptophan.

Serotonin

Serotonin (5-Hydroxy typtamine or 5-HT) is very important in brain chemistry. It is found in the central nervous system and has many implications on mood, behavior and sleep patterns.

Prozac & Antidepressants

The function of Prozac, and many other antidepressant drugs, is to increase the availability of serotonin in certain brain synapses. Unfortunately, these drugs can produce many unpleasant and dangerous side affects. Since neither tryptophan nor 5-HTP can be patented, drug companies have no interest in supplying these products to the public.

The Tryptophan Story

The amino acid L-Tryptophan was widely available during the 1980's as a nutritional supplement in health food stores and other major retail outlets such as supermarkets and drug stores. Many people used it for sleeping difficulties, premenstrual syndrome, stress, and depression. Between July 1989 and December 1990, more than 1,500 cases of a rare blood disease, Eosinophilia-Myalgia Syndrome (EMS), were suddenly reported in the United States to the Centers for Disease Control (CDC) in Atlanta, and 27 deaths were recorded. EMS is characterized by severe muscle pain and a dramatic increase in the number of eosinophils, a type of white blood cell. The CDC said that virtually all of these cases were linked to the use of tryptophan and in November 1990 tryptophan was taken off the market by the FDA.

Physicians in New Mexico and Minnesota noted that persons with this unusual disease had all been taking tryptophan supplements. However, the Chief Medical Officer of the Department of Health had not reported any cases of EMS by November 1989, in England where tryptophan was also a popular nutritional supplement. This led to a search for a contaminant in certain batches, rather than a problem with the use of tryptophan as a nutritional supplement. Researchers from the CDC and the Oregon Health Division of the State of Oregon, the Minnesota Department of Health and the Mayo Clinic all discovered the contaminant. It was found in tryptophan manufactured from January through June 1989, by Showa Denko K.K., one of six Japanese manufacturers that provided 50% to 60% all of the tryptophan to the United States. At the end of 1988, Showa Denko had altered their manufacturing process for tryptophan to allow the company to reduce the amount of activated charcoal purification required in their purification process by using a genetically engineered bacteria (Bacillus Amylo-liquefaciens, Strain V). It is unclear whether the new strain of bacteria, the reduction in charcoal purification, or a combination of both, led to the appearance of the EMS-producing contaminant at that time. The FDA currently has no plans to allow tryptophan back on store shelves nor any criteria for lifting the ban on tryptophan.

5-HTP & Depression

Prozac, and other anti-depressants in its class, work through the selective enhancement of serotonin. However, now that tryptophan is restricted by the FDA, researchers have clinically investigated 5-HTP in comparison to antidepressant drugs. The results of the studies have been astounding, both the groups taking antidepressant drugs and 5-HTP in the studies displayed identical reduction in depression. Depressed patients who received 100mg of 5-HTP, three times daily, showed at least a 50% improvement in their symptoms, without any reported side effects. Similar studies with depressed children demonstrated equal benefit. Subsequent studies were performed using 5-HTP for anxiety, panic disorder, sleep difficulties and obesity. Researchers observed an obvious decline in anxiety symptoms and patients with panic disorder noticed a feeling of relief after receiving 5-HTP. Melatonin, which helps regulate our sleep-wake cycle, is a metabolite of serotonin such that 5-HTP has positive effects on sleep patterns. In a six week clinical study with obese patients, those supplemented with 5-HTP were able to reduce carbohydrate intake, and experienced a feeling of early satiety, which contributed to significant weight loss.

Neurotransmitters

Serotonin is one of the ten or so major brain neurotransmitters; there are perhaps 100 minor neurotransmitters which are the biochemicals nerve cells use to "talk" to each other. There are an estimated 10 - 100 billion neurons in the human brain, and each neuron may connect to thousands of other neurons. Yet these interconnecting neurons do not quite touch, but require neurotransmitters to diffuse across the synaptic gap and "plug in" to the receptor sites of the next neuron, like keys fitting into locks. Neurons use electricity to propagate a signal down the length of their own cell structure, but use chemical neurotransmitter molecules to signal other neurons. When there is an inadequate supply of neurotransmitters to activate other neurons, various brain circuits become under, or overactive. Serotonin nerve circuits promote feelings of well being, calm, personal security, relaxation, confidence and concentration. They also help to counterbalance the tendency of brain dopamine and noradrenalin (two other major neurotransmitters) to encourage over-arousal, fear, anger, tension, aggression, violence, obsessive-compulsive actions, overeating, anxiety and sleep disturbances. Many people suffer from various degrees of brain serotonin deficiency, leading to a host of mental, emotional and behavioral problems. Serotonin, dopamine, and noradrenalin are the three main "monoamine" neurotransmitters. They are each made from one specific amino acid. Serotonin is made from tryptophan, while dopamine and noradrenalin are made from tyrosine. All serotonin used by brain cells must be made within the neurons and due to the blood-brain barrier (BBB), no serotonin can be "imported" from outside the brain. Friendly molecules needed by the brain, such as amino acids, are limited in their access to the brain

Tryptophan vs. 5-HTP

In the 1970's, many people found that 500 to 3000 mg of supplementary tryptophan daily provided practical relief from depression, PMS, insomnia and obsessive - compulsive disorders. However, tryptophan is not the best natural, non-drug way to deal with the serotonin deficiency syndrome. Only about 1%, or less, of dietary tryptophan ever enters the brain. The rest is used to make various body proteins; 60 mg tryptophan is required to make one mg B-3; and some is converted by other body cells into serotonin. Furthermore, taking tryptophan supplements while under elevated cortisol-stress conditions may dramatically raise pyrrolase activity in the liver creating toxic 3-OH-K, XA, 3-OH-AA levels, all molecules known to cause liver damage and bladder cancer. It may not be just by chance, or coincidence, that nature has arranged tryptophan to be the least plentiful amino in our diets. Fortunately, 5-HTP is a safe, natural and effective alternative to both tryptophan and the serotonin-potentiating drugs such as Prozac and has been researched for over 25 years. It is now available without a prescription and there are several advantages to using 5-HTP: it is not degraded by the tryptophan pyrrolase to kynurenine; it easily crosses the blood-brain barrier; and it is not used to make vitamin B-3, as is tryptophan. In comparison to tryptophan, 5-HTP directly targets brain cells to increase brain serotonin without using any drugs such as carbidopa or benserazide to prevent 5-HTP to serotonin conversion outside the brain. Indeed, some studies have shown better results using 200 to 300mg 5-HTP/day as an antidepressant than other studies using a daily intake of 2000 to 3000mg or more of tryptophan.

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