

Pyridoxine, The Vitamin of Dreams

During the 1930's was the high time of vitamin research. Scientists were each racing to discover the next vitamin and essential nutrient that would bring them renown and glory.

The widely used, crude, yet effective, method for vitamin research involved laboratory experiments conducted on animals, predominantly rats. The rats would be fed limited experimental diets and researchers would observe symptoms and then try to determine if the symptoms were caused by a deficiency and then try to isolate the substance to cure the deficiency. Voila! A vitamin! I agree, it is not the most scientifically sophisticated approach, but many vitamins were discovered using this method.

One such vitamin was discovered by a Hungarian doctor named Paul Gyorgy. In 1934, he was studying a peculiar phenomenon in his laboratory rats. Large numbers of them developed a skin disease called dermatitis acrodynia that closely resembled pellagra. When he isolated the cure he named it pyridoxine, vitamin B6.

Since then, later scientists have discovered a total of seven different forms of B6, six of which are entirely inter-convertible, the seventh is the "waste" form that is excreted from the body via the urine. The metabolically active form is called Pyridoxal 5'-phosphate (PLP). So far, one hundred and forty PLP dependent activities have been found and more are still being discovered. These one hundred and forty known activities are not concentrated into a single

organ or an isolated body system, but are incredibly pervasive involving many different organs and systems.

The oldest commercial use for supplemental B6 was to treat the nausea and vomiting during pregnancy, i.e. "morning sickness". A research study conducted in Austria in the early 70's found a strong correlation between low levels of B6 and morning sickness. The Austrian study concluded that women who develop nausea and vomiting during the course of their pregnancy should supplement B6 and zinc.

B6 is not only important just for the health of the mother, but for the fetus/infant as well. One of the functions of B6 is to turn glutamic acid in the brain into gamma aminobutyric acid (GABA). GABA is a neurotransmitter that calms the body and deficiency of GABA causes seizures. B-6 deficiency is strongly related to the risk of eclampsia during pregnancy and infantile convulsions due to the body's inability to produce sufficient GABA as a result of insufficient B6.

In 1952, infants aged two months and younger that were fed a vitamin formula that did not contain B6 developed muscle abnormalities and convulsions that disappeared only when B6 was included in the formula. It should be obvious by now that the observance of adequate B6 in prenatal care is of great importance.

B6 plays a vital role in other brain functions as well. Parkinsonism, a motor syndrome characterized by tremors, postural instability, gait

abnormalities and other motor skill impairment. Parkinson's Disease is a condition that causes chronic degenerative parkinsonism. The primary treatment method for parkinsonism is through the supplementation and production of dopamine in the brain. Because dopamine is only produced in the brain and the molecule is too large to pass the blood brain barrier if supplemented, dopamine precursors are used, primarily L-DOPA, which can cross the blood brain barrier and become dopamine in the brain. In order for L-DOPA to become dopamine, B6 is required to complete the process. Therefore, a possible method for relieving parkinsonism symptoms is by supplementing B6 to boost dopamine production.

People with Parkinson's disease, however, have a bit of a catch-22 when it comes to B6. Sufferers already have low levels of dopamine and need additional L-DOPA to make sufficient dopamine. Depending on the levels of B6 in the body, the L-DOPA may be processed into dopamine *before* it can enter the brain and thus the dopamine cannot enter the brain where it is needed and the L-DOPA treatment becomes ineffective. Thankfully, the wonder of science has developed inhibitors that are taken in combination with L-DOPA that prevent the B6 from processing it until it has crossed the blood brain barrier.

Dopamine and GABA aren't the only substances dependent upon B6 for adequate synthesis. Serotonin, epinephrine, and norepinephrine are

three vital neurotransmitters that require adequate B6 in order to be synthesized. Because of this, B6 is being aggressively studied as a natural alternative treatment base for people with Premenstrual Syndrome, Premenstrual Dysphoric Disorder (severe PMS), clinical depression, and in some cases attention deficit disorder.

Though B6 is an integral part of the nervous system and maintaining healthy brain chemistry, it also plays an essential role in preventing heart disease. High levels of homocysteine in the blood have been linked to an increased risk of cardiovascular disease due to the damaging effects it has on blood vessels. During the body's healing process, plaque tends to build up in these areas where the vessels are being repaired. This build up can clog the blood vessels and lead to cardiovascular complications. B6 naturally prevents this plaque from accumulating, as well as controls platelets from sticking to each other, and thereby lowers blood pressure. All of these actions promote a healthier cardiovascular system and lower the risk of heart disease.

A more unusual, but still interesting, phenomenon of B6 is its relationship to dreaming. Researchers studying schizophrenics with a particular condition called *pyroluria*, which is a genetic condition that produces excessively high levels of a substance that removes large amounts of B6 from the body, creating an ongoing B6 deficiency, have reported that these patients either do not dream or do not recall dreaming, at least not since

childhood. When B6 is supplemented, often with zinc, patients report that they begin to dream again for what feels like the first time in their lives. In fact, researchers at the Brain Bio Center have used dream recall as a measuring device to gauge B6 deficiency in a patient. Other scientists have made similar reports in preliminary studies on normal people who have reported increased dream vividness and recall while supplementing B6. The exact mechanism behind this is still unknown since it has not been strongly researched yet.

Just this year, a very exciting research study was published on the relationship between B6 intake and the risk of colon cancer. Larsson et. al. showed an inverse relationship between B6 levels and risk of colon cancer where the risk was nearly decreased by half with moderate B6 intake.

While not nearly as incredible as potentially defeating colon cancer, B6 may greatly reduce the symptoms of a number of common maladies like alcoholic hangover, monosodium glutamate sensitivity (Chinese Restaurant Syndrome), as well as many of the physical symptoms associated with PMS like bloating, breast pain, and premenstrual acne flare. According to Wikipedia, "...strong evidence that pyridoxine supplementation, starting ten days before the menstrual period, prevents most pimples from forming. This effect is due to the vitamin's role in hormone and prostaglandin regulation. Skin blemishes are typically caused by a hormone

imbalance, which vitamin B₆ helps to regulate.

Because of the body's incredibly broad need for B6, overdose is virtually impossible from food sources. There have, however, been cases of B6 overdose in rare cases when individuals were supplementing over 1000 mgs per day for months at a time. The typical therapeutic dosage is under 500mgs per day. The overdose symptoms were predominantly sensory neuropathy and pain and numbness in extremities. Once supplementation is stopped, the symptoms are reversed. There are some unique medical conditions, however, that may require dosages above 500mgs per day, but these should be done only after the consultation and recommendation of a qualified medical professional.

Other than that, B6 is a very safe and very effective natural nutrient that incredibly important for the general health and overall performance of your body and making sure that you get the adequate amount that your body needs is a very wise idea. Who knows? Maybe you'll start to see your dreams a little clearer.



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