

# The Power of B-6

by Billie J. Sahley, Ph.D., C.N.C.

When someone calls the Pain & Stress Center and asks for suggestions about which supplements to take we always recommend adding vitamin B-6, either Rodex B-6, a timed released formula or Pyridoxal 5'Phosphate (P5'P) to their daily supplements. P5'P is the biologically active form of vitamin B-6. Most people are unaware how essential vitamin B-6 (pyridoxine) is to their over-all health. B-6 is involved in more bodily functions than almost any other single nutrient. It affects both physical and mental health. The results of a B-6 deficiency can include heart disease; carpal tunnel syndrome; arthritis; gynecologic and obstetric disorders, including infertility and edema of pregnancy; brain dysfunctions, such as epilepsy, and autism; diabetic retinopathy; and depression. Without proper amounts of B-6 your body is unable to repair worn-out tissue, produce antibodies to fight infection, or maintain neurotransmitters for brain function.

Since it's discovery in 1934, vitamin B-6 has become the most researched vitamin on earth. In the body B-6 is transformed to pyridoxal phosphate, a coenzyme responsible for activating enzymes and enzyme systems. Enzymatic actions are responsible for virtually every biological action in the body. Enzymes are so critical to life that when enzyme levels decrease and enzyme activity slows down illness is not far behind. Without sufficient pyridoxal phosphate present in the body enzymes cannot function.

Enzymes are not the only process dependent on adequate B-6; the biochemical action that controls protein metabolism cannot function without B-6 either. There are 20 distinct amino acids in the human body; they are the building blocks of protein. If there is inadequate B-6 intake you cannot properly metabolize amino acids. Today's modern diet is high in protein. If B-6 is lacking, some of the metabolites from the breakdown of protein become toxic. For example, with a B-6 deficiency, there is an abnormal buildup in the blood of 3-hydroxykynurenine and 3-hydroxyanthranilic acid from the breakdown of tryptophan. These metabolites suppress the production of insulin by the pancreas, which can lead to elevated blood sugar levels, an indication of diabetes.

The National Research Council has set the Recommended Dietary Allowance (RDA) of vitamin B-6 for a healthy person at 2 milligrams (mg) per day. At this low amount you would assume that it would be easy to acquire adequate B-6 from the diet. Scientific evidence shows that millions of people need significantly greater amounts of vitamin B6 than the recommended 2 mg. Recommended therapeutic doses of B-6 are from 100 to 300 milligrams (mg) daily. If you ate one pound of fresh bananas, one pound of broiled lean beef, six slices of whole-wheat bread, and one cup of whole cow's milk you would have provided your body with only 3.8 mg of B-6. Over a period of three

consecutive years the Tuskegee Institute in Alabama evaluated pregnant women with pregnancy-induced hypertension (toxemia). It was determined that their B6 intake was only 43 to 48 percent of the RDA.

## Heart Disease

High homocysteine levels are now considered to be a more accurate indicator of heart disease than cholesterol levels. Homocysteine is a protein by-product resulting from the normal metabolism of the essential amino acid Methionine. Homocystine can be metabolized to make more methionine or cysteine but vitamin B-6 must be present for this conversion to take place. If there is insufficient B-6 homocystine levels will build up in the blood and cause damage to artery walls. The damaged arteries encourage plaque buildup, which then clogs the artery leading to heart attack and stroke.

## B-6 and Diabetes

Type I and type II diabetes is a chronic disease involving carbohydrate metabolism that has the potential for many complications. Diabetics are two to four times more likely to suffer a heart attack, two to three times more likely to have a stroke, and two times more likely to need a leg amputation. Diabetes is the leading cause of blindness and end-stage kidney disease in the United States.

A number of years ago a study called the Diabetes Control and Complications Trial (DCCT) proved that good blood sugar control could reduce the incidence of most diabetic complications—*reduce* but not eliminate complications. This started Dr. John Ellis, medical director of clinical research at Titus County Regional Medical Center, Mt. Pleasant, Texas and author of *Vitamin B-6 Therapy* to consider that there must be some other factor involved in causing these complications.

Clinical tests have proven that vitamin B-6 deficiency is common among diabetes. Addressing the deficiency has shown to stop many of the common complications. Dr. Ellis studied twenty-one diabetes and the effect of B-6 supplementation in the prevention and treatment of diabetic retinopathy over two years. During the two years the patients received the B-6 therapy (100 to 300 mg per day) their visual acuities were found to remain stable or actually improve. Incidence of carpal tunnel syndrome among these study participants resolved and heart health remained good.

According to Dr. Ellis, evidence is significant that diabetic patients who have taken 100 to 300 milligrams of vitamin B-6 daily for a period of years are more likely to survive heart attack and live years longer than patients who have not followed this protocol.

## Carpal Tunnel Syndrome

Carpal tunnel syndrome (CTS) is a condition that produces irritation or compression of the median nerve in the carpal tunnel. The median nerve supplies most of the sensation to the hand and muscle power to the thumb. If left untreated it may result in permanent nerve and muscle damage. The current treatment offered by the medical model is either steroid injections or surgery. However numerous studies have demonstrated that vitamin B-6 deficiency is the root cause of this common disorder. Therapeutic supplementation with 150 to 300 mg B-6 daily will resolve the symptoms in almost all cases of CTS. Response to the treatment can be expected within three to four months although some people see marked improvement in symptoms in a much shorter time. However as Dr Folkers a noted B-6 researcher says, "continue the B-6 as long as you eat." When you consider the importance of B-6 to your overall health this is excellent advice. When patients stop the B-6 supplementation symptoms will reappear.

## Arthritis

Arthritis is a broad term and can include a number of conditions that are unrelated. Bacterial infections, gout, and rheumatoid arthritis are examples. Dr. John Ellis after many years of research on vitamin B-6 believes that 90 percent of what is called arthritis is really a biochemical change in the synovium of the tendons and joints, particularly in the fingers, thumbs, elbows, shoulders, knees, and hips due to deficient B-6. B-6 deficiency causes changes in the synovium that is experienced as swelling, pain and stiffness in the joints, symptoms that most of us label as "arthritis".

If someone is experiencing joint stiffness Dr. Ellis recommends supplementing 200 mg B-6 daily for 90 days. At the end of this time if the condition is unchanged then it is possible that something other than a B-6 deficiency is going on. If the condition has improved then the 200 mg of B-6 should be continued indefinitely.

## Obstetric and Gynecologic Disorders

Vitamin B-6 supplementation is very helpful in preventing many obstetric (OB) and Gynecologic (GYN) problems. There is strong relationship between protein metabolism, the female hormone estrogen and B-6. Estrogen is at its highest peak during the premenstrual period and during pregnancy causing fluid retention. B-6 helps to counter estrogen's sodium retaining properties and significantly reduces the overall swelling and bloating seen in PMS. 50 to 300 mg of B-6 daily during pregnancy will often stop edema, muscle spasms, paresthesia of hands, painful finger joints, incoordination of hand movements, and abnormal weight gain. B-6 and B-1 have been shown to stop "morning sickness" in pregnant women. Consult a qualified health care professional for B-6 recommendations.

## Brain Function

Because B-6 is so involved with the metabolism of protein or amino acids it only stands to reason that it is

crucial for brain health. Many amino acids function as neurotransmitters in the brain. If you are unable to properly metabolize amino acids this will result in deficiencies of critical neurotransmitters causing depression, anxiety, attention deficit disorder, and autism. Adding 150 to 300 mg B-6 or Pyridoxal 5'Phosphate (P5'P) is crucial when supplementing with amino acids, not only to receive the benefit from them but also because without sufficient B-6 the metabolic process does not complete it's cycle and leaves toxic by-products such as homocysteine.

## Recommended Therapeutic Daily Dosages

According to Dr. Karl Folkers 50 to 300 milligrams is a safe daily dosage of vitamin B-6 for all adults. Dr. John Ellis after 35 years of clinical research recommends the following daily dosages, which have all proven safe:

- Children aged four and under—2 mg daily
- Children aged twelve to eighteen—5 mg daily.
- Adults—100 to 200 mg daily. Consider Rodex B-6, a time-release capsule or use Pyridoxal 5' Phosphate (P5P).

## References

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