

## VITAMIN B12

### Vitamin B12 and the disorders of the nervous system.

Vitamin B12, also called cobalamine because it contains the rare metal cobalt, is extremely important for the functioning of the nervous system and the production of red blood cells. The medical and scientific communities have recognized the importance of this vitamin for almost 50 years; in fact, two Nobel prizes have been awarded for research on vitamin B12.

Severe deficiency of vitamin B12 can result in serious illness, or even death. As with other vitamins, however, only a small amount of vitamin B12 is required for normal functioning of the body. In a healthy person a well-balanced diet will provide sufficient amounts of vitamin B12. Foods that are especially high in vitamin B12 include liver, fish, and dairy products.

Most people consume an average of about 10-30 micrograms of vitamin B12 daily, only about 1-3 micrograms of which is required for normal functioning of our bodies. There are several conditions, however, that may predispose people to vitamin B12 deficiency. Strict vegetarians and their infants are at risk of vitamin B12 deficiency, as are smokers, people with gastro-intestinal problems or poor absorption of nutrients, or those infested with fish tapeworms. Several congenital diseases or chronic diseases and certain drugs have also been associated with vitamin B12 deficiency. For example, the peripheral nerve damage frequently seen in people with diabetes has been attributed to the effect of high sugar levels in the blood; however diabetics have also been found to have lower levels of B vitamins. Although supplementation of these vitamins has not cured peripheral nerve damage in these patients, some improvements have been reported. Recent reports have also described an association of AIDS and multiple sclerosis with vitamin B12 deficiency.

Symptoms of severe vitamin B12 deficiency can be quite debilitating. In certain people, smoking can cause loss of vision, which is thought to be due to lack of vitamin B12. Other neurological problems that arise from deficiency of vitamin B12 include psychosis and dementia as well as symptoms of spinal cord and peripheral nerve damage. Peripheral nerve damage, or peripheral neuropathy, causes numbness, "pins-and-needles", and weakness of the limbs. Spinal cord damage can lead to impairment of walking, or complete paralysis of the legs as well as to incontinence. Aside from neurological problems, vitamin B12 deficiency can also cause a severe (pernicious) anemia.

The effects of mild vitamin B12 deficiency are not so clear. In the past, it was very common for a family doctor to give a patient vitamin B12 injections for a variety of vague symptoms that were assumed to be caused by a mild vitamin B12 deficiency. The injections were necessary because, unlike most other vitamins, vitamin B12 is poorly absorbed when taken by mouth. In recent years,

the development of a test to measure the amount of vitamin B12 in the blood has essentially put a stop to this practice, since the test has shown most people to have normal levels of vitamin B12.

A 1988 study published in The New England Journal of Medicine, however, suggested that this test might not be as accurate as was originally thought. The authors of this paper found that people with such symptoms as "pins-and-needles" sensations, unsteadiness, memory impairment, weakness, personality and mood changes, and fatigue had vitamin B12 deficiency that was not detected by the usual test. Only special, more sensitive tests revealed the true level of this vitamin. The editorial that accompanied this article asked, "Could it be that the many cobalamine injections given over the years for vague symptoms were in fact justified?"

Vitamin B12 is inexpensive, has no side effects and very often makes people feel better. In view of this latest information, it may, in fact, make sense for doctors to resume the practice of giving vitamin B12 injections for certain vague symptoms.