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B12 – Heart and Mind



Vitamin B12 is one of the better known nutrients and was, in fact, the last vitamin to be discovered. It was found in the 1940s as the substance that was responsible for curing Pernicious Anaemia. B12 is unique as it is the only B vitamin that is actually stored in the body, with most being stored in the liver. Most people know of this vitamin to be used for anaemia, as a good 'blood builder' or 'for energy' but it has other uses too.

The absorption of B12 can be a complicated process. Digestive enzymes are used to separate the B12 from protein found in foods which then binds to a substance called Intrinsic Factor of Castle. Some people have low levels of Intrinsic Factor or stomach acid, sometimes both, which can lead to B12 being difficult to absorb and resulting in deficiency. It is also worth mentioning here that Folic Acid can mask B12 deficiency.

B12 is needed by the body to manufacture the phospholipids found in cell membranes and the myelin sheath, the protective coating around nerve cells. These phospholipids are important for healthy nerve function. Since B12 is stored in the liver, we generally have

reserves and it can take a while for the deficiency symptoms to manifest themselves. Once neurological damage has occurred however, it is irreversible. High doses may prove useful in degenerative conditions such as Multiple Sclerosis or diabetic neuropathy.

B12 has a role in mental function due to its ability as a 'methyl donor'. A methyl group is required for manufacturing and recycling the brain's neurotransmitters and the amino acid Methionine. The facilitation of neurotransmitter production is important in maintaining mental clarity, alertness, memory and mood. B12 itself is needed to produce an essential coenzyme involved in the production of brain chemicals dopamine and serotonin, hence its role in helping to alleviate depression.

The recycling of Methionine leads to a lowering of the toxic compound Homocysteine, with elevated levels being shown to be a risk factor in the development of Alzheimer's. Elevated Homocysteine also poses a significant risk in the development of atherosclerosis which can cause cardiovascular disease. Homocysteine is an aggressive amino acid which can damage the inside of blood vessels. This then starts a response by the body to repair the damage, part of which is the deposition of cholesterol (it's only trying to help, guys!) on artery walls in order to smooth blood flow. If you have too much 'sticky' LDL cholesterol then things spiral out of control.

It is important to note that B12 doesn't act alone in the Homocysteine story. It works in combination with Vitamin B6

(continued overleaf)

DEFINING : 5-HTP

5-HTP (5-Hydroxytryptophan) is an amino acid which we make from another amino, Tryptophan. It is mostly known for its antidepressant action but has many more actions from weight loss to pain relief.

Its antidepressant action comes from its role in Serotonin production, which is one of our brain chemicals which affects mood. Studies have shown that 500mg twice daily can be effective in some depressed individuals when used long term, although some require up to 3000mg per day to see results.

Serotonin not only elevates mood but can also have a calming effect, with studies linking low levels in individuals who suffer anxiety attacks. Dosages of around 200mg per day seem to be effective in reducing symptoms in not only those who are prone to panic attacks but also healthy individuals. Supplemental 5-HTP can also help reduce night terrors in children, although it would be preferable to use Tryptophan-rich foods (turkey, chicken, dairy, bananas) first.

Its action in raising Serotonin is also useful when it comes to the promoting sleep. Serotonin is the precursor to Melatonin, which is our hormone for regulation of our sleep-wake cycle, and when taken half an hour before bed, can help those with insomnia by increasing their quality of sleep.

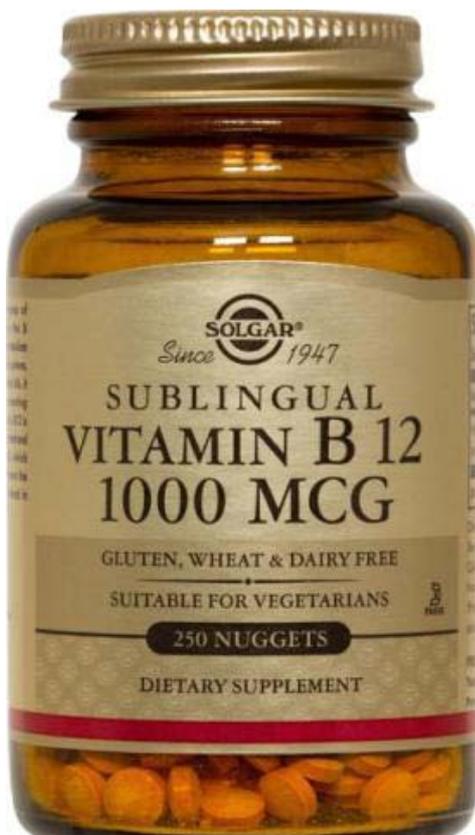
Tryptophan has been shown to help with appetite and weight control with studies showing it can inhibit insulin release and decrease appetite for carbohydrates. Studies conducted on animals that were given a Tryptophan-free diet showed a



significant increase in appetite which resulted in binge eating and a preference for carbohydrate rich foods.

Low Serotonin levels can be associated with a lower tolerance to pain. Increasing Serotonin has been shown to alleviate or relieve pain in people with headaches and dental pain. In fact, migraines are sometimes referred to as Low Serotonin Syndrome, with sufferers having low levels of Serotonin present in their tissues. In one study, Tryptophan given at a total dose of 3g per day resulted in a 50% reduction in pain intensity. The pattern with migraines is complicated as it seems to cause migraines in some people but, on average, it helps more people than it makes worse.

Tryptophan supplements came under scrutiny 20 years ago when a contaminated batch from Japan made its way into the marketplace. Tryptophan was taken off the market even though the problem was a contaminant and Tryptophan is present in almost all foods. 5HTP which is the more active form anyway was then extracted from an African bean called Griffonia and has been sold now for about 15 years.



and Folic Acid to help convert high levels of Homocysteine back into Methionine. Recent research now points towards the supplemental use of this combination to prevent brain shrinkage and cognitive decline in the elderly. Research done 3-4 years ago at the University of Oxford showed that the combination of these three B-vitamins reduced brain shrinkage which is one of the main predictors of Alzheimer's.

When supplementing with B12, look for a sublingual lozenge or a spray. There are two different forms on sale, Cyanocobalamin is the main form in most supplements. Methylcobalamin, however, is the most active form of B12 and we keep a number of options in this.

Taking B12 sublingually enhances the absorption into the bloodstream through the tissues under the tongue, bypassing the stomach and the need for Intrinsic Factor. Dosage wise, 1000mcg per day is therapeutic in prevention of disease although if deficient, initial dosages may be higher. Higher doses of single B vitamins can deplete others in the body so when taking large amounts, taking a B-complex or multivitamin alongside is beneficial. The EU RDA for B12, however, is only 1mcg. Because of the tremendous difficulty absorbing the nutrient higher levels are used in supplements. B12 is also safe at high levels and no toxicity is known. The highest food sources of B12 are animal derived such as offal, fish, eggs, meat, liver and cheese as well as being found in fortified breakfast cereals. For vegans and vegetarians, dietary intake is poor so supplementing with B12 is important to ensure adequate daily intake and prevent deficiency.

Paul, Hanover Healthfoods