Vitamin B12 lozenges are a great tasting, high dose vitamin B12 product. Each berry flavored lozenge contains 5000 mcg methylcobalamin, the activated form of vitamin B12. They are designed to deliver B12 through the mucous membranes in order to bypass the need for intrinsic factor, a protein produced in the stomach known to be needed for maximal GI absorption of B12.

The body is able to use methylcobalamin more efficiently than cyanocobalamin, the most common form of supplemental vitamin B12, yet a form not found in nature and a form which is not biologically active. In comparison, methylcobalamin is better absorbed and has a higher retention rate in the body's tissues. Supplementation using methylcobalamin eliminates the need for the liver to convert cyanocobalamin to the active forms of vitamin B12. The body is able to absorb B12 directly through the mucosal tissue of the mouth, making these B12 lozenges an ideal method to help increase the body's level of this critically important vitamin.

Vitamin B12 lozenges are a great alternative to B12 injections that are often given to overcome a B12 deficiency and to support conditions associated with suboptimal B12 levels. They are an ideal way to help increase levels of B12 quickly, when higher doses of this vitamin are desired.1

B12 Functions

Vitamin B12, also known as cobalamin, is one of the many B vitamins. It is the only water soluble vitamin that the body is able to store, with some storage occurring in the liver and muscle tissue. The remaining vitamin B12 that is not used by other tissues and organs is excreted. Therefore, it is important to consume foods that contain this valuable vitamin and/or supplement on a daily basis. B12 functions include: conversion of food into energy, nerve cell function support, nerve myelination – necessary to make the myelin sheath that protects nerve cells, RNA and DNA metabolism, melatonin secretion, methionine/homocysteine metabolism and the production of SAMe, healthy red blood cells, and acetylcholine (needed for memory and learning).

Methylation: The active methylcobalamin form was selected for these lozenges because it is this form which is essential for facilitating methylation, the critical biochemical process that assures proper stem cell differentiation and the proper production of brain chemicals (neurotransmitters). Methylcobalamin is required for the function of the enzyme methionine synthase, which is needed to make the amino acid methionine from homocysteine. Methionine, in turn, is needed to make S-adenosylmethionine (SAMe), an important methyl group donor. Poorly functioning methionine synthase can cause harmful homocysteine to accumulate, leading to an increased risk of cardiovascular disease and other chronic conditions. In addition, the methyl donors from methylcobalamin are needed to make adrenaline from norepinephrine, as well as melatonin from serotonin.

Methylcobalamin's ability to directly influence melatonin production/secretion is most likely what enables it to help normalize circadian rhythm (the body's 24 hour clock) or the sleep-wake cycle.2,3 What this translates to is that methylcobalamin is involved in helping to regulate melatonin levels for proper day/night function, with decreased levels during the day and increased levels at night. Thus, this active form of B12 may prove beneficial in the sleep cycle as well as the quality of sleep, contributing to improvements in alertness and concentration during daytime hours.4

Because methylcobalamin is involved with brain and nerve methylation, it is a valuable nutrient for the health of the nervous system. Research has shown it to be a positive adjunct in various neurological and neurodegenerative disorders such as multiple sclerosis (demyelination of the nerves), Bell's palsy, and amyotrophic lateral sclerosis (ALS).5,6
B12 Deficiencies

There are many causes of B12 deficiency, a fairly common occurrence, one that is most likely far more common than many practitioners may realize. Vitamin B12 is found only in animal foods, in a wide range of meat and dairy products. Thus, vegetarians and vegans should be tested for B12 deficiency and should supplement vitamin B12 daily. Keep in mind that a serum deficiency may not show up for quite some time. Functional markers, such as the methylmalonic acid (MMA) test, found on the Designs for Health Metabolic Profiles is a preferred method of determining functional B12 status in individuals.

The elderly are another population at risk, as they often do not have adequate hydrochloric acid in their stomach to maintain intrinsic factor. Research shows that the elderly who are suffering from neurological impairment may also benefit from vitamin B12, where supplementation may lead to improvements in cognitive function. In fact, a B12 deficiency can often mimic symptoms of dementia.

In addition to the elderly, anyone who suffers from inflammatory intestinal disorders including colitis, celiac and Crohn’s may also have insufficient B12. Many medications can cause a B12 deficiency such as antibiotics, chronic use of stomach acid-controlling drugs (used for ulcers, heartburn, or reflux), metformin (prescribed for type-2 diabetes) and various anticonvulsants. Other contributing factors include alcoholism (alcohol decreases B12 absorption), chronic stress, and smoking.

Pernicious anemia is probably one of the most well-known conditions associated with a B12 deficiency. It is an autoimmune condition in which the body is unable to make an adequate amount of healthy red blood cells (RBCs) due to a lack of vitamin B12. Individuals with this condition cannot absorb enough B12 from food due to a lack of intrinsic factor. Without enough RBCs to carry oxygen throughout the body, those afflicted will often feel weak, tired, dizzy and suffer from headaches, shortness of breath, nerve damage (numbness or tingling in hands and feet), and neurological problems (confusion, memory loss, and digestive issues). The tongue’s surface can also get altered, creating a smooth, shiny appearance. Long term, pernicious anemia can cause damage to the brain or heart resulting in arrhythmias or heart murmurs.

Supplementation with oral vitamin B12 in its coenzyme or active forms (such as methylcobalamin) at doses above 1000 mcg has been shown to combat the B12 deficiency seen in pernicious anemia, indicating that some of the vitamin’s absorption is independent of intrinsic factor. Perhaps this is because in supplement form, B12 is not bound to protein from food and thus does not need enzymes or stomach acids to detach it from a protein source. In high enough doses, it appears that unbound B12 will overcome a lack of intrinsic factor due to its absorption through passive diffusion.

Supplement Facts

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>1 lozenge</th>
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<tbody>
<tr>
<td>Amount Per Serving</td>
<td>% Daily Value</td>
</tr>
<tr>
<td>Vitamin B-12 (as Methylcobalamin)</td>
<td>5000 mcg</td>
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</tbody>
</table>

Other Ingredients: Mannitol, modified cellulose, natural berry flavor, vegetable stearate, citric acid, luo han guo.

Signs and symptoms of B12 deficiency

- Fatigue
- Depression
- Dizziness
- Dementia
- Numbness (fingers, toes, etc.)
- Pernicious anemia
- Heart palpitations
- Red burning tongue
- Bleeding gums and mouth sores
- Muscle weakness
- Nausea
- Shortness of breath
- Poor appetite

How to Take

Dissolve one lozenge in mouth per day. It is important to let the lozenge dissolve slowly and not chew it in order to allow the vitamin to be absorbed properly through the mucosal tissue that lines mouth.

For a list of references cited in this document, click on the link below

To contact Designs for Health, please call us at (800) 847-8302, or visit us on the web at www.designsforhealth.com