

# B12 Folate

## Methylcobalamin + Methylfolate (5 MTHF) Formula

### Recommended Use:

- ▶ Prevent B12 deficiency
- ▶ Help the formation of red blood cells
- ▶ Support the nervous system
- ▶ Promote a healthy cardiovascular system
- ▶ Enhance brain health
- ▶ Enhance immune system function
- ▶ Improved memory and learning
- ▶ Optimizing vegetarian and vegan diets

B12 Folate is a fast dissolving sublingual lozenge that contains high dose vitamin B12 (methylcobalamin) and folate (L-5-Methyltetrahydrofolate). Methylcobalamin (MeCbl) and methylfolate (MeF) are the biologically active form of B12 and folate, immediately available in the bloodstream upon sublingual absorption.

### B12 – The Problem with Absorption

The absorption of vitamin B12 requires it to first bind to haptocorrin in the stomach. Once in the duodenum it is released from haptocorrin, via pancreatic enzymes, and binds intrinsic factor (IF). Only after this can vitamin B12 be absorbed in the ileum. There are several conditions that can hinder this absorption pathway, by impeding on proper production of IF or through inflammation, such as: chronic *H. pylori* and small intestinal overgrowth, inflammatory bowel disease, celiac disease, tropical sprue, bypass or resection of the ileum and gastrectomy.<sup>11</sup>

### B12 Deficient Populations

There are two populations that are particularly vulnerable to B12 deficiencies, the elderly and vegetarian/vegans. The primary sources of B12 in our diet are animal products (organ meat, fish, eggs, ect.), therefore strict vegetarians and vegans are advised use daily B12 supplementation to prevent a deficiency.

B12 deficiencies also tend to become more prevalent with age, due to the decline of stomach acid that occurs with age. Stomach acid is required to

release B12 from its proteins so it can be placed on the haptocorrin transport to the duodenum. By decreasing the levels of stomach acid you are decreasing the amount of B12 that can be absorbed.

Interestingly, there is now a trend towards more people becoming B12 deficient at a younger age. Scientist postulate that one of the reasons is that we are exposed to higher amounts of stress. The stress spikes cortisol and the cortisol suppresses stomach acid production, thus reducing B12 absorption.

Another problem is the high prevalence of MTHFR (the enzyme required to generate methylfolate) genetic polymorphisms in the general population.<sup>17</sup> This reduced enzyme activity will reduce the amount of biologically active folate available. It is for these reasons supplementing with the MeF and MeCbl forms are preferred by many practitioners.

### Methylcobalamin and the Nervous System

B12 is required for the synthesis of the essential fatty acids that make up the myelin sheath and for acetylcholine production, a neurotransmitter that assists with learning and memory. Over the last decade, a number of central and peripheral neurological disease states have been linked to deficiencies of methylcobalamin. It's the methylated form of vitamin B12 that is required to maintain the myelin sheath and therefore, methylcobalamin is protective against central and peripheral neurological disease and aging.

Studies have also shown that MeCbl is the preferred form taken up by subcellular organelles of neurons<sup>13</sup> and when high doses of methylcobalamin are given remyelination is promoted and motor and sensory functions improve.<sup>16</sup>



#### Medicinal Ingredients: Each lozenge contains:

Vitamin B12 (Methylcobalamin) . . . . . 5 mg  
 Folate (L-5-Methyltetrahydrofolate) . . . . . 1 mg

**Non-medicinal Ingredients:** Stevia rebaudiana (leaf), citric acid, DL-malic acid, white grape flavour, silicon dioxide, magnesium stearate, d-mannitol.

**Recommended Dose (Adult):** Dissolve one lozenge under the tongue daily, in the morning for maximum benefit, or as directed by a health care practitioner.

**Recommended Duration of Use:** Consult a health care practitioner for use beyond 3 months.

**Recommended Use or Purpose:** Vitamin B12 is a factor in the maintenance of good health; helps the body to metabolize carbohydrates, fats and proteins; helps to form red blood cells; helps to prevent vitamin B12 and folate deficiency.

**Cautions/Warnings:** Consult a health care practitioner prior to use if you are pregnant or breastfeeding. Do not take other health products containing Vitamin B12.

NPN 80070708 • 60 Lozenges



Deficiencies of B12 can also result in deterioration of mental function and neurologic damage that can yield symptoms such as: memory loss, decreased reflexes, weakness, fatigue, disorientation, impaired pain perception, tinnitus (chronic ringing in the ears), hearing difficulties, neuropathy, burning tongue, numbness or pins and needles or burning in the extremities, depression, sleep cycle disturbances and various psychiatric disorders.

The good news is that supplementation can prevent this or help improve some of these symptoms after they have already developed. For example, studies have shown that MeCbl can enhance memory, emotional function and improve communication in patients with Alzheimer's disease.<sup>12</sup>

## Folic Acid on Psychiatric Applications

Reports indicate neuropsychiatric diseases, secondary to folate deficiency, can include: dementia, schizophrenia-like syndromes, insomnia, irritability, forgetfulness, endogenous depression, organic psychosis, peripheral neuropathy, myelopathy, and restless legs syndrome.<sup>5,6</sup> And when it comes to depression, lower serum folate concentrations are associated with an increased severity of depression.<sup>7</sup>

Studies done by Botez et al., have found that unrecognized and treatable folate deficiency may be the basis of many neurologic, psychiatric and gastrointestinal disorders – with restless legs syndrome being the main clinical expression.<sup>8,9,10</sup> Their experience indicates oral supplementation for 6 to 12 months can eliminate or control symptoms, in these cases.<sup>8,9,10</sup>

## Folic Acid and The Treatment of Elevated Homocysteine

Clinical studies concluded that methylcobalamin and folic acid are more effective at lowering total homocysteine (tHcy) plasma concentrations when given together.<sup>1</sup> Both MeCbl and MeF are required for the remethylation pathway (regenerates methionine from homocysteine) to regain normal activity.

Elevated levels of homocysteine increases your risk of coronary artery disease, myocardial infarction, peripheral or cerebral occlusive disease (stroke). In a 15 year, Canadian study on coronary artery related mortality (in 5,056 men and women aged 35 to 79), found that lower serum folate levels correlated with significantly increased risk of fatal coronary artery disease.<sup>2</sup>

Elevated homocysteine is also a strong predictive factor for developing Alzheimer's disease.<sup>13</sup> In fact, studies have shown that reduction of serum homocysteine levels, through supplementation, can slow the rate of brain atrophy in patients with mild cognitive impairment.<sup>14</sup>

Supplementing with B9 and B12 has been shown to lower homocysteine in a safe and effective way!<sup>3,4</sup>

## B12 and B9's Role in Development

B12 and B9 are involved in developing the nervous system, DNA, RBC's, ect. and deficiencies have been linked to birth defects. Scientific evidence suggests that adequate folic acid may reduce a woman's risk of having a child with a brain or spinal cord defect, making it an important prenatal nutritional supplement or for those planning to become pregnant.<sup>17</sup>

## Hematopoiesis

B12 and B9 are required for production of nucleic acids and this means that areas of high cell turnover, such as the hematopoietic system, suffer the most from B12 deficiencies. This is why low red blood cell and white blood cell counts are a common result of B12 or B9 deficiencies.

**CLINICAL PEARL:** By supplementing vitamin B12 and B9 together you avoid what is called B12 deficiency masking. Supplementing B9 alone can improve measurable parameters, such as serum homocysteine levels and macrocytic anemia, but the B12 deficiency will remain.<sup>15</sup> This can lead to the false assumption of improved health and the unaddressed B12 can lead to peripheral neuropathies. Supplementing both will avoid this problem.

### References:

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