What if you bought a new car but your key didn’t fit? You wouldn’t go anywhere. What if you bought an expensive new coat, but your arms were too big for the sleeves? You’d be left out in the cold, and probably cursing your wasted money. Well, the same thing can happen with B-vitamins, only the poor fit isn’t as obvious. And this is critical because if you are using B-vitamins that don’t fit, you will be left vulnerable to a whole host of problems caused by suboptimal levels of the healthy Bs.

The forms of B-vitamins outside our bodies must be altered inside our bodies before we can use them. Much of this transformation takes place in the liver. Unfortunately, up to 30% of people have genetic differences that impair this process, and other people have problems with liver function that keep the B-vitamins from their proper “fit.” Additionally, we are seeing more and more people with very poor levels of B-vitamins, and this contributes to accelerated aging and chronic disease. Here are some of the problems associated with poor B-vitamin status: anemia, depression, low energy, heart conditions, nerve disorders, limb numbness, mental confusion, behavioral issues, cognitive decline, and Parkinson’s disease!

However, there is an answer to this dilemma. By using the forms of B-vitamins that are identical to the kind your body utilizes, you can bypass this problem entirely. In this Terry Talks Nutrition®, we are going to discuss the best forms of B-vitamins and why they are so essential to your health!

Why is There a Crisis of B-Vitamins?
B-vitamin deficiencies are more common than you might think. Many things can conspire to rob our systems of these important vitamins: genetic conditions, liver dysfunction, digestive and intestinal problems such as Crohn’s disease or chronic heartburn, common prescriptions, and even aging can reduce our ability to achieve optimal levels of these essential nutrients.

As for prescription drugs, many actually deplete B-vitamins from the body, including birth control pills, certain diabetes, epilepsy, blood pressure and ulcer medications, steroids, and antibiotics. In fact, up to 30% of people taking metformin (a drug for type 2 diabetes) have significantly reduced vitamin B12 absorption.

Even over-the-counter pain relievers like ibuprofen are at fault. People using these kinds of drugs must be especially vigilant about making sure they are getting enough B-vitamins.

Not All B-Vitamins are the Same!
It’s estimated that up to 30% of the total population cannot fully utilize the B-vitamins from food and supplements, so getting the right forms of B-vitamins — especially those which need no conversion by the liver — is vitally important. Three absolute “must-have” B-vitamins include:

**B6 as P-5-P (Pyridoxal-5-Phosphate):** Vitamin B6 is available in more than one form, but only one of them is the biologically preferred form of the vitamin B6 in the human body — Pyridoxal-5-Phosphate, or “P-5-P.” By providing this necessary nutrient in the P-5-P form, it doesn’t require conversion by the liver.

**B12 as Methylcobalamin:** The vitamin B12 you’ll find in most supplements isn’t all that usable by the body. It’s usually in the cyanocobalamin form, which requires conversion by the liver, so its value can be limited. However, by supplementing with the methylcobalamin form, the nutrient is already in the ultimate form that the body needs.

**Folate as Methylfolate:** Like P-5-P and methylcobalamin, the methylfolate form of folate is an active form, versus the more common folic acid.

Reasons You Need These Bio-Active B-Vitamins

**Homocysteine Levels:** Homocysteine is an amino acid that is associated with damage to blood vessel walls, increased cholesterol oxidation (making LDL-cholesterol “stickier” and more likely to clog arteries), increased risk of stroke, and inflammation throughout the cardiovascular system. It’s been well established that B6, B12, and folate can lower homocysteine levels, which in turn, affect inflammatory markers and other risks to heart and artery health.

Most practitioners and professionals agree that elevated homocysteine levels at the very least reflect current heart concerns in their patients, and many feel that it could indicate cardiovascular trouble down the road.

The good news is that B6 as P-5-P, B12 in the form of methylcobalamin, and folate as methylfolate can help the body convert potentially dangerous homocysteine into beneficial methionine — so this situation is reversible. I would recommend that if you know or suspect that you have high blood pressure, you have your blood levels of homocysteine tested by a licensed healthcare practitioner. You may simply have difficulty converting B-vitamins, which could lead to higher levels of the amino acid. If that’s the case, a supplement formula providing these three forms is absolutely the right choice.

P-5-P plays a role in reducing homocysteine levels, too. In another clinical study, researchers found that patients with coronary artery disease (as opposed to those in the control group) had low levels of P-5-P. The authors of the study concluded that “in addition to a link with homocysteine, low pyridoxal-5-phosphate confers an independent risk for coronary artery disease.”

Of course, inflammation and elevated homocysteine levels don’t just affect one system. While homocysteine is generally considered a risk for blood pressure and heart health, it is also linked to the development of Parkinson’s and Alzheimer’s disease, as well as osteoporosis.

**Mental Well-Being:** Bioactive B-vitamins are about more than protecting the mechanical systems of our bodies. They can very much affect the way we think and feel, more than protecting the “machinery” of our bodies. They can very much affect the way we think and feel, and why we are so essential to your health!

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research shows that methylfolate may help people with depression. However, folate deficiency is probably very common. Even if you eat a folate-rich diet with leafy greens, and don’t take any depleting medications, you could still have a genetic predisposition to B-vitamin and folate deficiencies. That’s because about 50 to 60% of the population has a gene polymorphism (called the C677T polymorphism) on the MTHFR gene that limits folate conversion! And that same genetic predisposition is seen in 70% of people with a major depressive disorder.

One open trial where a bioactive form of folate was administered found an improvement in depression symptoms in 81% of those completing the four week program. In another, more recent study, low folate levels in the blood appeared to double the risk of depression in older adult Latina women.

And, relating back to elevated homocysteine levels, a Greek study found that older adult men with depression had lower levels of folate and B12, and higher levels of homocysteine compared to older adult men in the group without depression.

The fact that folate is so important to our mental well-being is seen in newer therapies that use methylfolate combined with prescription treatments to more successfully address depression.

One of the reasons that methylfolate alleviates depression is that it is involved in the synthesis of neurotransmitters including serotonin, norepinephrine, and dopamine in the central nervous system. Bear in mind that although folic acid – a common form of folate found in most supplements – is readily absorbed in the intestine, it is not biologically active. It must go through many metabolic stages before it is converted to the usable form of methylfolate, which is the form that crosses the blood/brain barrier as well.

Methylcobalamin (B12), may also support the body’s production of melatonin, helping set our circadian rhythm so we can sleep better and more deeply. Getting good sleep is a major component of having the energy you need and a positive outlook the next day – one that we probably overlook too often as seeming just too obvious.

But the fact is, even mild deficiencies of folate, B6 and B12 can lead to irritability, general muscle weakness, mental fogginess, and fatigue, so making a bioactive B-formula part of your daily regimen is a good idea, especially if you’ve been feeling a little worn-out and wondered why.

Diabetic Neuropathy and Muscle Health: B-vitamins help preserve the myelin tissue on our nerve endings that send signals to the brain.

While diabetes – especially what’s known as “Type 2 Diabetes” – is on the rise for individuals who have kidney failure, peripheral neuropathy associated with P-5-P deficiency is just as much a concern. However, there is hope.

In one clinical study, researchers noted a correlation between uremia patients, peripheral neuropathy, and low levels of P-5-P (pyridoxal-5-phosphate). Within just one month of treatment, serum pyridoxal-5-phosphate levels rose in 8 of the 12 patients treated with B6, and sensory abilities showed an improvement, too.

As for diabetic neuropathy, a four-month, double-blind, placebo-controlled clinical study showed improvements in autonomic muscle symptoms (like heart rate) and somatic symptoms (like leg muscle control), after patients in the treatment group took methylcobalamin daily.

Another study combining L-methylfolate with methylcobalamin (vitamin B12) and P-5-P (vitamin B6) showed that it improved the nerve fibers that lay close to the surface of the skin in people with Type 2 Diabetes. At the end of 6 months, 73% of the patients being treated with this combination showed an increase in those nerve fibers. 82% reported reduced frequency and intensity of the “pins and needles” feeling or of the painful sensation (or lack of sensation) brought about by simple touch and contact.

For even more about diabetic neuropathy and bioactive B-vitamins combined with additional nutrients, see my article, “Hope for Neuropathy.”

Did you know that if you’re suffering from inflammation, you’re probably deficient in vitamin B6? It’s true. In fact, if you deal with rheumatoid arthritis, muscle stiffness, and even non-muscle related inflammation like IBS, chances are good that you have a deficiency of the vitamin.

For healthy muscles, the right B-vitamins can make all the difference. For example, if you work in any job that requires repetitive movement and you are beginning to feel the pain, numbness, and tingling of carpal tunnel syndrome in your wrist, hand, or forearms, the P-5-P in this group of B-vitamins can help.

And, here methylcobalamin is an appropriate partner nutrient, too. It is a must for nerve signal and muscle response. In fact, vitamin B12 deficiency interferes with your muscle and tendons’ ability to respond to signals, and dampens their reflex.

Moms-To-Be (and the Rest of Us) Need These B-Vitamins!

It’s well-known that folate is a necessary nutrient for women who are pregnant or planning to become pregnant to help prevent spina bifida or other neural tube defects. One of the reasons is because folate is so intricately involved with cellular division, by helping form nucleic acid precursors. Any deficiency in these building blocks during a baby’s development in the womb, and it becomes more likely that potential birth defects could follow. Given that much of the population is genetically predisposed to not metabolizing folates properly, this is a very real concern.

Vitamin B6 status may have a huge effect in the development of neurotransmitters in developing babies and newborn children. In fact, in some infants with epilepsy, B6 treatment with pyridoxal-5-phosphate has actually been considered life-saving – especially for children born with an inability to metabolize common vitamin B6 properly.

Bioactive B-Vitamins for a Healthy, Full, and Vibrant Life

The healthy concerns I’ve outlined here are only just a few of the reasons you need B-vitamins you can count on that are bioactive, and don’t need to undergo any cumbersome conversion process to be used by the body. I believe that these forms of B6, B12, and folate are the essentials that can literally lead to a healthy, full, and vibrant life.

Terry recommends a product with these ingredients.

Vitamin B6 (as pyridoxal-5-phosphate) 25 mg
Folate (as (6S)-5-methylfolate) (equivalent to 800 mcg 1,600 mcg of (6S)-5-Methyltetrahydrofolic acid, glucosamine salt)
Vitamin B12 (as methylcobalamin) 1,000 mcg

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