TO COPE WITH STRESS.....

For the majority of the population life throws us unexpected curves, short or long lasting, in which we are forced to deal with and move on. This is an inevitable fact of life. Unfortunately, these stressors of life take their toll on our physiology, stripping us of some of our most precious resources...b vitamins. This is one of the reasons why sometimes after dealing with prolonged stress we feel like we just finished the Tour de France on foot.

Interestingly, the nutraceutical universe does in fact provide a means to replenish these precious resources and at the same time, help ease the potential of flying off the handle when the stress volcano is on the verge of eruption.

What do B Vitamins do?

Our bodies have the amazing ability to convert macronutrients from food into usable potential and kinetic energy through myriad of biochemical pathways. We know that these reactions are catalyzed by enzymes (globular proteins that speed up reaction rates), but do enzymes have on/off switches? As much as enzymes have the ability to speed up reactions, most enzymes require coenzymes and cofactors (small organic and inorganic molecules that are required by enzymes to carry out their catalytic activity).

The majority of our energy comes from ATP, creatine and other phosphagens (energy storage compounds). These end products, in a nutshell, give us energy. But, how do these energy molecules come about? This is where the b vitamins come into the scene. Imagine if high energy-yielding phosphagens were the end product on an assembly line in a factory. The assembly line would be the reaction pathway, the workers on the assembly line would be enzymes, and the b vitamins (cofactors) would be the tools the workers use to form the product intermediates. Now you can see how detrimental it would be if one worker did not have a tool to put together their piece of the puzzle. It would halt the entire assembly line. The big picture: No tool, no product. No b vitamin, no macronutrient conversion into a phosphagen (energy). In fact, studies suggest that increasing the amount of b vitamins through supplementation may not only increase energy, but help prevent certain neurocognitive disorders (Balk E et al., 2006). A sort of a one-two punch for enhancing physical and mental health.

The effects of stress on B vitamins

One of the major physiological damage pathways that stress initiates is activation of slight to moderate sympathetic responses. This initiates the fight-or-flight response and activation of the hypothalamic-pituitary-adrenal axis, producing catecholamines and cortisol, respectively. Catecholamine (adrenaline and noradrenaline) and corticosteroid secretion ultimately ends up in glycogenolysis, lipolysis, proteinolysis, and activation of myriads of different biochemical pathways. As previously stated, the majority of the enzymes involved in these pathways require b vitamins as coenzymes. In most cases, enzymes live short lives and are constantly being degraded and recycled, especially when prone to oxidative stress caused by overstimulated pathways (Zeevank GD et al., 1998). Enzymes in the cells of the adrenal glands are most prone to this during times of stress. As these enzymes get degraded, the amino acids get recycled, but unfortunately the b vitamin cofactors do not. They ultimately get excreted. Since us humans have the ability to make only a couple of b vitamins on our own, the rest of the b complex needs to be ingested.

What else does Be Calm provide?

Valerian is a flowering plant whose root when macerated, triturated, and dehydrated possesses anxiolytic and sedative properties. Some of the constituents of valerian root extract demonstrate GABA A1 receptor agonizing properties (Holzl J et al., 1989). In this manner, valerian root can almost be thought of as acting similar to prescription benzodiazepines (temazepam, lorazepam, etc.). Isovalerate (a fatty acid found in valerian) works its anxiolytic/sedative actions by doing just the opposite of caffeine. It acts as an adenosine A1 receptor agonist (Svenja K et al., 2006), resulting in a calming, sedating effect. Passion Flower is another flowering plant which
contains small amounts of β-carboline harmala alkaloids known to have anti-depressant properties by its monoamine oxidase (MAO) inhibiting actions (Duke, 2008). In fact, one study showed that after oral administration of passion flower extract anxiety levels were decreased in ambulatory surgery patients (Movafegh A et al., 2008). This may possibly be due to its influence on GABAergic and opioid receptors (Nassiri-Asl M et al., 2007).

Hops are the strobiles of the plant *Humulus lupulus*. The anxiolytic properties that hops possess are mainly due to their influence on certain enzymes in the limbic system of the brain controlling GABA levels and neurotransmission (Awad R et al., 2007). Skullcap (*Scutellaria*) likewise contains a flavonoid that works similarly to valerian, passion flower, and hops. Studies show the methoxyflavone's affinity to the same binding site on GABA_A receptors as certain benzodiazepines (Huen MS et al., 2003).

**Purpose**

Be Calm is a carefully formulated B-complex that includes various phytonutrients designed to help reduce, along with diet and exercise, the mental and physical wear and tear that physiological and psychological stressors can bring about. Be Calm provides a b vitamin spectrum in amounts that multi vitamins usually do not to help achieve this goal.

**References**


Chiefly harman (1-methyl-9H-carboline), but also harmaline (4,9-Dihydro-7-methoxy-1-methyl-3H-pyrido[3,4-b]indole), harmalol (1-methyl-2,3,4,9-tetrahydropyrido[3,4-b]indol-7-one), harmine (7-Methoxy-1-methyl-9H-pyrido[3,4-b]indole) and harmol: Drugs.com [2008], Duke [2008].


Awad R, Levac D, Cybulska P, Merali Z, Trudeau VL, Arnason JT; *Effects of traditionally used anxiolytic botanicals on enzymes of the gamma-aminobutyric acid (GABA) system*. Can J Physiol Pharmacol. 2007 Sep;85(9):933-42

