

“Get Your Cerebral Wheels Turning”

Cerebro Focus

We may remember times throughout our lives when our memory, focus and concentration for some reason, seemed to be at the top of its game. Of course, proper sleep and exercise were probably contributing factors, but there is another key factor that may have played a role... nutrition. Diet, along with exercise always seems to yield noteworthy results in cognitive performance. The brain and its associated legion of neurons not only benefit from but require certain nutrients that are only found in the foods we eat. So, what are these "smart foods" and how can we get them? Rest assured, we can take comfort in the fact that Viva Vitamins has taken the guess work (and the nutrients) out of these smart foods and conveniently placed them in the correct amounts for us in Viva Vitamins' new Cerebro Focus.

Roles of Vitamins in Neurophysiology

Just like any other tissue of the body, nerve cells rely desperately on enzymes and their respective cofactors to operate at full capacity. Virtually all enzymes require vitamins or minerals in their active site gorges to carry out biochemical reactions. This is how critical vitamins and minerals are to cell health. But how do they benefit neurocytes involved in cognitive function? Well, the fat-soluble vitamins (with the exception of vitamin K) provide anti-oxidative protection as well as protection against inflammatory attack on healthy, vulnerable neurons. The water-soluble ascorbic acid (vitamin C) is especially gifted in this arena¹. One of the major casts of characters who take center stage in the health of nerve cells is the b-vitamins. These guys collectively are responsible for the activation of more neural enzymes and trigger more cellular cascade events than any other vitamin or nutrient. For example, Vitamin B1 (Thiamin or aneurine HCl) is responsible for proper neural function and is directly involved in carbohydrate metabolism. There is even evidence that suggests that high doses of Vitamin B1 could decrease the risk of early diabetic nephropathies (N. Rabbani et al., 2008). Vitamin B2 (Riboflavin) like many of the other b vitamins, plays a vital role in the metabolism of fats, ketones, carbohydrates, and protein. One interesting use of riboflavin in alternative medicine is its use as an additive along with beta-blockers in the prevention of migraine headaches (Sándor PS et al., 2000). This is especially beneficial due to its powerful influence on cranial mitochondrial energy metabolism (Schoenen J. et al., 1998). Vitamin B6 is the key factor in the synthesis of some of our favorite monoamine hormones and neurotransmitters such as dopamine, serotonin, epinephrine and norepinephrine. These catecholamines set our brain's tempo for some of our critical thinking times. Although too many to name and describe in this article, the minerals do not fall short of a

round of applause for their involvement in almost as many neural enzymes as the vitamins. A cognitive-enhancing formula would not be complete, of course, without the inclusion of choline. Choline is an organic amine grouped with the B-vitamins that is found as a phosphatide linked up to lipids that make up cell membranes. Besides the structural integrity of phospholipid bilayers, choline also is required for certain types of neurotransmission and methyl group donating from choline's metabolites. Choline is the major component of *acetylcholine*, the main neurotransmitter in all autonomic ganglia. Without choline, we would have no short or long-term memory, we couldn't learn anything, and we'd forget everything.

Viva Vitamins' Cerebro Focus comes with the Magna Mind Proprietary blend, which is the best pick of nutrients in Mother Nature's pharmacy involved in human memory, focus and concentration. The Magna Mind blend consists of: DMAE (dimethylaminoethanol) a precursor to choline, which gets methylated and subsequently acetylated to produce acetylcholine (N. R. Zahniser et al., 1977). This neat little organic amine gives choline synthesis a nice little shove in the right direction. Glutamine, which is the most abundant non-essential amino acid found in humans is one of the only amino acids that is able to cross the blood-brain barrier. This amino acid is used as brain fuel and used for enhancing cognitive function (Jing H. et al., 200) by providing a skeleton for the formation of the brain's two most favorite anxiolytic and excitatory neurotransmitters: γ -aminobutyric acid and glutamate, respectively. Smooth Water Hyssop has been added to the formula as well due to its Bacosidic and saponinic contents which, although exact mechanisms aren't fully understood, exhibit noticeable nootropic effects (Rastogi S et al., 2004). Pyroglutamic acid (pidolic acid) is an amino acid which comes about as the product when glutamic acid spontaneously cyclizes to form a lactam-like configuration. This

unusual amino acid greatly enhances circulation to the brain (Semkina GA., et al., 2006). Phosphatidylserine is a must have in any brain enhancing formula. Besides its ligatory influence on certain excitatory receptors in the brain, it exhibits neuroprotective and nootropic properties through inhibition of microglial activation (Hashioka S. et al., 2006). And, what brain formula would be complete without the ever so popular DHA (docosahexaenoic acid). DHA is one of the longest chained omega 3 essential fatty acid our bodies use for brain phospholipids. Of all the fatty acids, DHA has the largest effect on brain polyunsaturated fatty acid composition (Youdim KA et al., 2000), and is greatly involved in the carrier-mediated transport of choline, taurine, and glycine (Arthur A. Spector 1999), among many other functions. Inositol is a carbocyclic polyol that is actually not classified as a vitamin since humans can make it on our own, but plays an important role as the structural basis for a number of secondary messengers within our bodies, including inositol phosphates, phosphatidylinositol and phosphatidylinositol phosphate (PIP) lipids. Besides being one of the main lipotropic agents our bodies use, it has also been observed to have similar if not equal beneficial properties to that of anti-depressants without any side effects (Fux M. et al., 1996). We all know about tyrosine's ability to increase the biosynthesis of our favorite catecholamines involved in mood elevation and cognitive performance (Deijen JB et al., 1994), but it is also a definite plus to have this amazing amino acid in a stable, highly bioavailable form. Cerebro Focus has chosen the acetylated form of L-Tyrosine due to its vulnerability to oxidation under even "normal" biological conditions (Jian Zhang et al., 2007). This way, we get even more out of the tyrosine we take. Cerebro Focus has also included Bilberry extract yielding 25% anthocyanosides which has shown in studies to enhance short and long term memory and even show promise for Alzheimer's sufferers (Ramirez MR. et al., 2005). Grape seed extract has also been included due to its highly protective capabilities in oxidative stress on neuroproteins involved in memory loss (Balu M. et al., 2005). In higher mammals, γ -aminobutyric acid (GABA) is the chief inhibitory neurotransmitter in the central nervous system. It plays a "very" important role in the regulation of neuronal excitability in the nervous system by acting as the gate keeper for potassium and chloride ionophores, thus synchronizing difference potentials in neuronal cell membranes. What this means is GABA is the signaling director in those instances where a neuronal spike causes us to "fly off the handle" if not adequately controlled. Vinpocetine is an interesting little alkaloid from the periwinkle plant.

It exhibits remarkable memory and concentration enhancing capabilities by its neuroprotective effect through blockade of excitotoxicity and attenuation of neuronal damage induced by cerebral ischemia and reperfusion (Adám-Vizi V, 2000). Vinpocetine is also an excellent vasorelaxant in cerebral smooth muscle tissue by unique phosphodiesterase inhibition mechanisms (Hagiwara M. et al., 1984), this means more blood flow to the brain. Vinpocetine has been reported to do all this without any adverse side reactions in human trials. Cerebro Focus comes with Trace Lyte™ a unique blend of physiologically balanced electrolytes which serve not only for osmotic homeostasis, but as a requirement for charge potentials within neurons. Huperzine A is a sesquiterpene alkaloid that not only acts as an NMDA receptor antagonist (protecting against glutamate-induced nerve damage) and increases nerve growth factors, but has a very interesting side mechanism. Huperzine A works hand in hand with choline as it acts as an acetylcholinesterase inhibitor, the same mechanism of action as the popular prescription medications Galantamine and Donepezil (Tang X. et al., 1999). Boron is also added to Cerebro Focus due to its recent findings that support the hypothesis that boron nutrition is important for brain and psychological function in humans (Penland JG., 1998). Vanadium is another interesting mineral added to Cerebro Focus due to its potential as a therapeutic agent to enhance ischemia-induced neurogenesis (Shioda N. et al., 2008).

Purpose

Viva Vitamins' *Cerebro Focus* has taken the best phyto nutrients out of the foods we eat (and in some cases, foods we've never eaten) that are directly involved in memory, focus and concentration, and strategically placed them into tablet form. There is no other cognitive enhancing supplement like it on the planet. *Cerebro Focus* is for any of us who don't have the time to nurture our brains the way it should be through correct diet and nutrition, or to simply supplement an already existing healthy lifestyle. Let *Cerebro Focus* lead the way to maximizing your brain's potential through it's wonderland of nutraceuticals.

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