Enhanced brain function with magnesium and curcumin

Supplements may help your body—but do they reach your brain? It's all about bio-availability. Protocol for Life Balance's Protosorb Magnesium and Cogumin SCLP are two of my favorite supplements on Fullscript. Here's a great rundown on the rationale for their use in supporting brain function.

—Dr. Hoffman

Brain health is a common concern for adults. As we live longer, we strive to maintain our cognitive function at its peak. We often juggle a multitude of simultaneous tasks

requiring brain power, such as keeping up with social media, multiple cellphone notifications, work-related emails, and instant messenger, etc. Because our brain is constantly bombarded with stimuli it has to process, maintaining its health is of the utmost importance as part of our overall health.*

As great tools to support brain health, supplements offer a safe way to nourish the brain with the nutrients it needs to function at its best.* While there are numerous brain health supplements, this article will focus more specifically on magnesium and curcumin.*

Dietary surveys of people in the United States consistently show that intakes of magnesium are lower than recommended amounts. Among non-dietary supplement users, intake typically amounts to less than 250 mg/d (for reference the current RDA for adult males is 420 mg/d). In fact, the 2005-2006 NHANES survey reported that nearly 50% of all American adults have inadequate intake from food and water.

In the body, magnesium is a cofactor in numerous metabolic reactions that regulate diverse functions of the body, including protein synthesis, muscle contraction, serum glucose and blood pressure regulation, energy production, nerve impulse conduction, and structural development.* In the brain, magnesium is involved in dopamine and serotonin release, synaptic plasticity, and inhibition of the excitatory neurotransmitter glutamate via its effects on N-methyl-D-aspartate (NMDA) receptor activity.*

Because magnesium is a critical nutrient for normal brain function, it is necessary that magnesium from dietary sources reaches this important organ. Magnesium homeostasis in the body is tightly regulated and relies upon a network of complex processes involving the intestine, bone, and kidneys. However, magnesium is handled differently in the central nervous system than in the rest of the body. For example, its concentration

in the cerebrospinal fluid (CSF) is higher than that of the plasma, and this gradient in concentration is maintained by an active transport process, which appears to regulate and limit the amount of magnesium that can be loaded into the brain. Therefore, when supplementing the diet with magnesium, it is important to know which magnesium source reaches the brain in significant amounts.

Protocol For Life Balance® ProtoSorb™ Magnesium was developed with this in mind. ProtoSorb™ Magnesium utilizes Magtein™ (magnesium L-threonate), a patented form of magnesium that is known to reach the brain. In a preclinical study evaluating CSF magnesium content following oral ingestion of several different forms of magnesium, supplementation with magnesium L-threonate for 24 days resulted in a 15% increase ($p<0.001$) in magnesium (Mg) concentration in the CSF.* The other magnesium forms (Mg chloride, citrate, and gluconate) that were tested did not elevate Mg concentration in the CSF when compared with controls. These data confirm that not all magnesium forms are created equal when it comes to reaching the brain and that Protocol For Life Balance® ProtoSorb™ Magnesium delivers the optimum form of magnesium for supplementing the brain with this indispensable micronutrient.

While curcumin is not, like magnesium, an essential micronutrient, it has a long history of presence in the diet, mainly in Asian cultures where turmeric is used as a spice in the daily diet and by traditional herbalists for a wide variety of ailments. In the scientific community, this extensive traditional use has triggered a lot of interest around understanding how this compound functions in the body and how it can support health.

From the extensive curcumin research done worldwide over the past fifty years, some clear facts have emerged. In laboratory tests, curcumin exhibits powerful free-radical scavenging properties and helps regulate various transcription factors[ł],

growth factors, enzymes, etc.* However, researchers have also discovered that the human body is not very good at delivering free, un-metabolized curcumin to different organs and in particular, to the brain. Indeed, curcumin is insoluble in water and undergoes rapid glucuronidation and sulfation in the small intestine and liver.

Because of this, scientists have been compelled to look for clever ways to increase the body's ability to deliver curcumin to its organs. One of these innovative techniques, developed by Verdure Sciences Inc., consists of creating a micro-emulsion made of soluble curcumin-lipid micelles called Solid Lipid Curcumin Particles (SLCP™). SLCP™ uses soy lecithin and a turmeric ethanol extract to create a finished product containing at least 20% curcuminoids, which is marketed under the trade name Longvida® Optimized Curcumin. The increased bioavailability of curcumin using SLCP™ technology was confirmed in a clinical study wherein significant plasma concentrations (C_{max}: 22 ng/mL) of free curcumin were detected after ingestion of 650 mg of this unique curcumin product. In the same study, ingestion of a turmeric extract standardized to 95% curcuminoids did not result in any measurable free curcumin in the plasma.

Preclinical data have confirmed that in addition to its superior bioavailability, SLCP™ are able to penetrate the blood-brain barrier, which is an indispensable property for a product that exerts its function in the central nervous system.* These unique pharmacological properties translate into a real clinical effect on cognitive function as demonstrated in a clinical study.* In this 4-week randomized, double-blind, placebo-controlled trial, healthy elderly volunteers receiving 400 mg Longvida® Optimized Curcumin, with approximately 80 mg curcumin in a SLCP™ formulation, were evaluated before and after supplementation using standardized tests measuring cognitive function with a Computerized Mental Performance Assessment System on items such as immediate and

delayed word recall, reaction time, rapid visual information processing, subtractions and delayed picture recognition. Volunteers in the Longvida® group significantly improved performance on sustained attention and working memory tasks as compared with placebo.* These data confirm that not all curcumin supplements are created equal when it comes to reaching the brain and that Protocol For Life Balance® Cogumin SLCP™ with Longvida® Optimized Curcumin delivers the optimum form of curcumin to the brain.

With ProtoSorb™ Magnesium and Cogumin SLCP™, Protocol For Life Balance® offers two supplements targeted for brain health.* The patented ingredients found in these products have been specifically developed with the support of cognitive function in mind.* From the initial concept, based on the known mechanisms of action of these ingredients, to the clinical validation of the finished products, care was taken to ensure that supplementing the diet with ProtoSorb™ Magnesium and Cogumin SLCP™ will give the results you expect from supplements that target brain health.*

[ł] Transcription factors: proteins that turn on and off gene expressions within cells.

***These statements have not been evaluated by the Food Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**