Protocol for Nutritional **BRAIN/COGNITIVE** Support

Practitioner Information - Protocol For Life Balance™ Supplements

Brain function depends upon maintaining a balance among neurotransmitters, adequate substrate supply, and proper circulation. Nutrients can influence these factors and more, including modulating immune elements linked to inflammation. The individual components of this protocol can be combined for more complete support.

Brain Regain™

This formula combines Huperzine A with *Ginkgo biloba, Centella asiatica,* L-glutamine and yet other nutrients. Huperzine A is an alkaloid that first was isolated from *Huperzia serrata* (Thumb) Trev by the Zhejiang Academy of Medical Sciences and the Shanghai Institute of Materia Medica, Chinese Academy of Sciences. It is found in an extract from a club moss that has been used for centuries in Chinese folk medicine. Huperzine is an extremely potent acetylcholine-esterase inhibitor. This is of importance in degenerative diseases, such as Alzheimer's, and generally is protective of memory, cognitive and behavioral functions (1, 2).

Ginkgo and C. asiatica in this formula support brain function by activating cerebral circulation and reducing oxidative stress (3, 4). Mixtures of nutrients including L-glutamine have been tested for improving cognition and memory (5).

Cautions and interactions

Huperzine A should be avoided by children, pregnant women and nursing mothers. There are possible adverse effects in those with seizure disorders, cardiac arrhythmias, asthma, irritable bowel disease and inflammatory bowel disease. This product should not be used by those taking prescription medications or who have a history of heart or pulmonary problems without the supervision of a physician (6). Ginkgo is generally well tolerated in the suggested usage range and has an excellent safety profile. See under "Phosphatidyl Serine + Ginkgo Biloba."

Phosphatidyl Serine + Ginkgo Biloba

Phosphatidylserine (PS) is a member of the class of compounds known as phospholipids. Phosphatidylserine in particular has an affinity for the proteins found within the cellular membrane matrix. This suggests, and evidence confirms, that the compound plays a special role in facilitating cell signalling functions. Phosphatidylserine is most concentrated in the cells of the brain and nerves.

Phosphatidylserine in animal studies has shown an ability to induce the production of a number of neurotransmitters and/or to prevent their age-related decline. These studies help to explain the observed clinical benefits. For instance, PS stimulates acetylcholine output and the synthesis and release of dopamine. Of special interest, tests of the electrical signal strength associated with memory function indicated that PS reversed the loss of signal which marks memory decline (7). In general, PS facilitates the activity of neurotransmitters involved in learning, memory and mood.

Combining phosphatidylserine with *Ginkgo biloba* has been tested in humans and found to support elements of memory and calmness (8). Ginkgo further supports brain function by activating cerebral circulation (4).

Cautions and interactions

Ginkgo is generally well tolerated in the suggested usage range and has an excellent safety profile. There are rare reports of headache, dizziness, stomach upset, nausea, diarrhea, vomiting, muscle weakness, loss of muscle tone, restlessness, heart racing, rash, ocular events, and irritation around the mouth with the use of ginkgo. The herb may decrease blood pressure and increase bleeding time. Significant warnings would appear to be limited to pregnancy and lactation, use of coumadin or other anticoagulants, surgery, anticonvulsants, and antidepressants. German authorities do not consider ginkgo to exhibit significant interactions with other medications or to pose danger during pregnancy/lactation.

Acetyl-L-Carnitine

Acetyl-L-Carnitine is a more bioavailable form of L-carnitine that can cross the blood-brain barrier. In mammals, the carnitine pool consists of nonesterified L-carnitine and many acylcarnitine esters, of which acetyl-L-carnitine is quantitatively and functionally the most significant (9). Acetyl-L-Carnitine also is known as acetyl-carnitine, L-acetylcarnitine, acetyl levocarnitine, ALC and ALCAR. Acetyl-L-Carnitine (ALCAR) delivers both L-carnitine and acetyl groups. A deficiency state of L-carnitine was first described only in 1972 and is most likely to be observed clinically in preterm infants, dialysis patients, and HIV-positive individuals.

A special quality of ALCAR is its ability to cross the blood-brain barrier to exert an antioxidant effect, help maintain cellular energy metabolism and support brain function (10, 11). The acetylated form of L-carnitine (ALCAR) facilitates the release and synthesis of acetylcholine by donating its acetyl group to aid in the production of acetylcholine, an important neurotransmitter involved in memory storage and neuromuscular stimulation (10). ALCAR also enhances the release of dopamine from neurons and helps it bind to dopamine receptors (11).

Cautions and interactions

Mild gastrointestinal symptoms have been reported at higher levels of intake, including transient nausea and vomiting, abdominal cramps, and diarrhea. Although the rate of incidence is quite low, increased agitation has been reported in some with Alzheimer's disease when taking acetyl-L-carnitine. In those with seizure disorders, there are, again, rare reports of increases in seizure frequency and/or severity. Drug interactions are not common. However, L-carnitine should be used cautiously, if at all, with pentylenetetrazole inasmuch as evidence suggests the combination might exacerbate the side effects of the drug (15). L-carnitine may affect the anti-arrhythmic effect of propafenone and mexiletine in patients with ischemia (12).

A large number of drugs may decrease L-carnitine and acetyl-L-carnitine levels. These include anticonvulsant medications (such as phenobarbital and valproic acid) and a variety of antibiotics (for instance, pivampicillin). ALCAR may be used as a dietary supplement if taking certain medications for HIV, cancer and acne (9, 13).

Additional Support

(Ultra) Omega-3, L-Glutamine, Taurine

Omega-3 Fish Oils are useful general additions to this protocol to support the proper regulation of inflammatory processes.

Glutamine, a nonessential amino acid that appears to be conditionally essential during periods of physiologic stress, plays an important role in immune function.

Taurine has been explored as a neuroprotective agent in numerous *in vivo* studies.

References available at www.protocolforlife.com

Brain Regain™ _____ X _____
(Suggested: 1 twice daily)

PS & Ginkgo Biloba _____ X _____
(Suggested: 3 daily)

Acetyl-L-Carnitine _____ X _____
(Suggested: 2-4 daily)

Additional Support Products:

Ultra Omega-3 _____ X _____
(Suggested: 1 tsp. or 4 softgels daily)

L-Glutamine _____ X _____
(Suggested: 1-3 daily)

Taurine _____ X _____
(Suggested: 1-2 daily)

Please note the instructions, cautions and interactions on each product package, and begin each new product separately, in turn. Use only under the supervision of a qualified health practitioner.