

Improving Cognitive Functioning with Nutrient Therapy  
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An astounding study recently found a strong correlation between nutrient status and better performance on difficult visual spatial and abstraction tests; (*American Journal of Clinical Nutrition*, 1997:65, 20-29). Present or past intakes of protein, vitamins B-1, B-2, B-6, B-12, E, C, folic acid, and niacin were all related to intellectual performance in healthy, elderly individuals.

If aging adults can improve visual and abstract intellectual functioning simply by eating better and taking supplements, is it not logical that the same would be true for children struggling to develop these skills? In many ways the deterioration of mental flexibility and sharpness accepted as part of growing older is similar to the processing sluggishness often seen in children with developmental delays. In one situation, the ravages of age are the culprit; in the other, a total load of stressors causes the brain to process information slowly or inaccurately.

Even in cases of overt brain disease or damage, such as Alzheimer's, numerous studies have indicated that cognitive function can be improved with specific nutrients. Only a small intellectual leap is necessary to consider the possibility that a nutrient capable of improving word recall and concentrating in memory-impaired adults may also be useful to a child with word retrieval or concentration problems.

When starting children or adults on nutrient support for the brain, a general, comprehensive, multiple vitamin and mineral is used as a base. The B vitamins and magnesium seem to be particularly important in optimizing neuro-transmission. Thiamine (vitamin B-1) and Riboflavin (vitamin B-2) are necessary for converting food into the chemical energy the brain needs to function. Vitamin B-6, a co-factor in over 300 critical reactions has also been shown to help neurodevelopment.

Once general nutrient support is in place, specific nutrients can be added depending on the individual situation. For those with known neuro-transmission issues, such as delayed myelination, brain injury, concentration or memory impairment or auditory processing delays, phosphatidyl serine (PS) should be considered. Available in gel caps or liquid, PS is an important structural component of brain cell membranes. It is found in tiny amounts in numerous foods, but concentrates in the brain, making animal brains the best dietary source. Since it is no longer safe to eat animal brains, the prudent way to get significant amounts is through a vegetable-based concentrated supplement.

By increasing the release of many neurotransmitters, including dopamine and acetylcholine, PS may speed up mental processing without causing the hyperactivity that sometimes accompanies substances that stimulate the release of a single neurotransmitter. The drug Ritalin, for example, is thought to target dopamine. While this effect generally increases focus, driving up dopamine alone also escalates obsessive compulsive behaviors (such as tics) and arousal, causing poor sleep. PS, on the other hand, can more gently enhance cognitive function through its structural role in the brain. A typical result may be a child who requires less prompting to speak or an adult who remembers names and directions better.

An average dosage of PS for children is 100-200 mg. For adults, use 200-400 mg. Vegetable based PS often is derived from soy and should be avoided in cases of severe soy allergy. In addition, the most popular liquid PS (Membrain Essentials) is thought to

contain tiny amounts of BHT and should not be used by those with known BHT reactivity, although many children on the Feingold diet can use it successfully.

A nutrient related to PS is choline, found in the body as phosphatidyl choline or as part of the neurotransmitter, acetylcholine. Increased intake of this nutrient may also improve cognitive ability. Choline (as phosphatidyl choline) is the primary active ingredient in lecithin. Food sources include fish, eggs and soy products.

Cholinergic neurons (nerve cells acted on by acetylcholine) are located throughout the brain in areas that control memory, intellect, emotions, movement coordination and muscle contraction. While supplemental choline can be useful, it occasionally increases the activity (and therefore, agitation level) of some children. It is well tolerated in adults.

A short cognitive enhancement program for both children and adults might include both choline and phosphatidyl serine. In adult studies, participants had significantly improved memory function after taking PS for at least 6 weeks. Neither choline or PS has any known toxicity.

For more information on PS, choline and other cognitive enhancers, contact Cognitive Enhancement Research Institute (415-321-CERI) publishers of the excellent newsletter, *Smart Drug News*. The Life Enhancement Company (1-800-543-3873) is another resource that sells cognitive-enhancing nutrients and distributes a free newsletter to its customers.