The Fourth Component to Healthy Aging

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In the January newsletter article, Five Critical Components to Healthy Aging, I touched upon the five most important ways individuals can stay healthy throughout their lives. In February, I began a five-part series to address each of these components in more detail and have already addressed the first three components, cardiovascular, bone and joint and blood sugar health. This month, I will discuss cognition.

Unlike conventional physicians, who often specialize in one area of the body, holistic health involves realizing the body as a whole is connected. This same concept applies to cognitive health. Many of the factors I discussed in past installments of this 5 Components series—such as homocysteine levels, blood sugar control, adequate sleep and stress—also play an important role in retaining optimal memory as we age. Therefore, in this article, I will touch upon each of these factors and their relationship to memory as well as outline an appropriate supplement regimen to enhance cognition.

Memory and Homocysteine

The medical literature has found a link between high homocysteine levels and reduced cognitive function. Furthermore, high homocysteine concentrations have been associated with a greater risk of Alzheimer’s disease and dementia. Epidemiological studies have confirmed that elevations in plasma total homocysteine precede the development of dementia and that there is a continuous, inverse relation between plasma homocysteine concentrations and cognitive performance in older persons. High levels of the homocysteine-lowering B-vitamin folate (plasma and dietary) have remained independently protective against a decline in certain measures of memory, leading researchers to conclude that low B vitamin and high homocysteine concentrations predict cognitive decline.”1

In a recent randomized, double blind, placebo-controlled trial of men and women aged 50-70 years with raised plasma total homocysteine and normal serum vitamin B12 at screening, folic acid produced significant improvements in memory, information processing speed and sensorimotor speed compared to the placebo group.2

These results led the researchers to conclude, “Folic acid supplementation for 3 years significantly improved domains of cognitive function that tend to decline with age.”

Given the association between homocysteine and cognitive decline and the fact that these B vitamins have been shown to lower homocysteine levels, there is merit to supplementing with each of these vitamins.

Melatonin and Memory

Just like adequate sleep is an important factor in blood sugar control (see Blood Sugar Control: The Third Component to Healthy Aging), it is also an important part of cognitive enhancement. Melatonin, the hormone produced by the pineal gland when we are asleep in a dark room, helps the body manufacture serotonin, a hormone involved in mood and relaxation. The medical literature has widely acknowledged a prominent role of serotonin in memory functions.3 Pineal calcification, a marker of melatonin deficiency, is also known to widely occur in Alzheimer’s disease patients, further
establishing the link between melatonin and memory. In rodents, melatonin inhibits expressions of proinflammatory factors, which may contribute to improvement of learning and memory function in AD. Melatonin combined with vitamin E also has improved cognitive function in rats with diabetes-induced learning and memory impairment.

Similar improvements have been noted in humans. In a double-blind, placebo-controlled pilot study of 26 healthy elderly subjects who received either 1 mg melatonin or a placebo nightly for 4 weeks, melatonin administration improved cognitive scores along with sleep quality.

The Blood Sugar Link

High blood sugar levels have been implicated in memory impairment in a number of studies. I touched upon blood sugar’s role in health in greater detail in the last installment of the 5 Components to Healthy Aging and outlined a nutritional approach for stabilizing glucose levels. However, blood sugar plays such an important role in cognitive health that I wanted to mention it briefly in this article. Peptide signals from the pancreatic islets and the gastrointestinal tract influence the regulation of energy homeostasis by the brain, and the brain in turn influences the secretions of both the islets and the gut. Insulin receptors are also densely expressed in the hippocampus, and insulin acts there to facilitate learning and memory. Obesity and/or the consumption of diets high in fat render the brain as well as the body insulin resistant. This is why type 2 diabetes often leads to cognitive impairment and dementia.

In an interesting study of both non-diabetic and diabetic women, the levels of glycosylated hemoglobin (HbA1C), a marker of glucose control, predicted the development of cognitive impairment in the subjects. The higher the HbA1C levels, the greater the likelihood of developing mild cognitive impairment or dementia. This led the researchers to conclude, “Our findings support the hypothesis that glucose dysregulation is a predictor for cognitive impairment.”

I recommend that anyone interested in preserving cognitive function follow the nutritional protocol I recommended in Blood Sugar Control: The Third Component to Healthy Aging.

Neurodestructive Effects of Stress

Stress and cortisol are known to impair memory retrieval. Cortisol’s effects on memory retrieval may be due to glucocorticoid receptors in the hippocampus and prefrontal cortex. In addition, repeated stress in animal models causes brain regions involved in memory and emotions, such as the hippocampus, amygdala, and prefrontal cortex, to undergo structural remodeling with the result that memory is impaired and anxiety and aggression are increased.

Studies have shown that stress can have a very specific effect on various aspects of memory. In 20 healthy young men, psychosocial stress impaired working memory at high work loads, but not at low work loads. High cortisol levels at the time of testing were associated with slow working memory performance at high loads, and with impaired recall of moderately emotional, but not of highly emotional, paragraphs.

Patients who receive high doses of glucocorticoids (i.e. cortisol) also suffer impaired long-term memory functions.
Additional Factors

Hormones have an equally important role to play in cognitive health. Androgens and estrogens both influence the brain’s ability to retain information.12 Potential neuroprotective effects of estrogen include lowering beta-amyloid, enhancing cholinergic function, promoting synaptic plasticity and nerve process growth, reducing oxidative stress, and enhancing brain glucose transport.13 A critical window of time may exist around the menopause when hormone therapy may delay or decrease cognitive changes, so natural hormonal support should begin as soon as possible.

Ensuring the brain receives sufficient oxygen supply is another way to enhance cognitive function. The 100 billion neurons within the human brain require sufficient oxygen to operate efficiently. In fact, the brain at rest weighs a mere 2 percent of the body weight, yet demands 20 percent of the oxygen provided by the heart. Anyone who wakes up tired, is told he or she snores excessively, or stops breathing while asleep should have oxygen levels monitored by a health care provider as sleep apnea affects millions of Americans.

Because all of the factors mentioned above can influence the way our brains process information, I recommend a multi-pronged approach that includes 1) homocysteine-lowering nutrients (folic acid, vitamins B12 and B6 and betaine); 2) a combination of the cortisol-lowering botanicals Relora® and Sensoril™; 3) GluControl™ and the other glucose-regulating nutrients mentioned in the Third Component to Healthy Aging article; 4) melatonin; 5) natural hormonal replacement when necessary; and 6) supplementing with the cognitive-enhancing nutrients mentioned below.

Botanical and Nutritional Support

Vinpocetine, huperzine, DMAE and ginkgo are specifically known to support memory enhancement and are an equally important part of a cognitive-enhancing program. Since I first wrote about these nutrients in the initial installment of The 5 Components of Healthy Aging, a number of exciting new studies on ginkgo have been published. One new study in a mouse model of Alzheimer’s disease found that ginkgo significantly increases cell proliferation in the hippocampus of both young (6 months) and old (22 months) mice and that it stimulates enhanced neurogenesis. It also reduces the deposits of amyloid-beta plaques thought to be responsible for the brain damage seen in Alzheimer’s.14 These effects led the researchers to conclude that ginkgo “has therapeutic potential for the prevention and improved treatment of AD.”

In another new double-blind trial of 400 subjects with Alzheimer’s disease or vascular dementia, ginkgo improved dementia scores while subjects receiving the placebo experienced a deterioration of scores.15 According to the researchers, the data adds further evidence on the safety and efficacy of ginkgo “in the treatment of cognitive and non-cognitive symptoms of dementia.”

Ginkgo can be used synergistically with natural cognitive enhancers such as huperzine-A, investigated for its ability to significantly improve symptoms of Alzheimer’s disease and other forms of dementia,16-17 and vinpocetine, a constituent of the common periwinkle (Vinca minor). In a 16-week, double-blind, placebo-controlled trial of 203 people with mild to moderate dementia, vinpocetine produced significant benefit in the treated group.18
DMAE is another nutrient involved in brain health. DMAE’s effects have been studied in behavioral disorders in children. Dr. Leon Oettinger, Jr., found that DMAE accelerated mental processes, improved concentration span, abolished early morning fogginess, relieved lassitude and mild depression and improved IQ.19

**Conclusion**

Taking the proper steps to preserve our cognitive health is one of the most important aspects of a healthy aging program. By controlling blood sugar, homocysteine and stress levels, receiving proper sleep, balancing hormones and supplementing with cognitive-supporting nutrients, our journey for optimal health is certain to be a memorable one.

**References:**