



Huperzine & Vinpocetine

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Literature Education Series On Dietary Supplements

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Many people would like to improve their memory and mental energy, and there are many fine dietary supplement ingredients to help them do just that. The newest of these are the botanical ingredients Huperzine and Vinpocetine, although the most popular and extensively researched cognitive-enhancing ingredient is the herb Ginkgo biloba. So if Ginkgo is the most popular and most researched botanical, why consider using two new botanical ingredients which seem to have a redundant benefit? The answer is really very simple: Ginkgo biloba works to improve short-term memory by enhancing cerebral circulation. Huperzine and Vinpocetine, on the other hand work by totally different mechanism to achieve a similar goal. This means that Huperzine and Vinpocetine will compliment Ginkgo's function, not substitute for it. Here's how they work.

Huperzine

Huperzine is a natural substance derived from an extract of Huperzia serrata, a Chinese moss. Most of the research conducted on Huperzine demonstrates that it is a promising new treatment for Alzheimer's disease. The reason for this has to do with acetylcholine.

Acetylcholine is a neurotransmitter (i.e., transmits messages from one nerve cell to another) which is well understood in its role in the central nervous system, relating to memory and cognitive function. There is, however, an enzyme called acetylcholinesterase (AChE) which prevents acetylcholine from performing its cognitive functions. When AChE is released in the body, it inactivates

acetylcholine within 1/500 of a second.¹ Although this is a normal activity, AChE production can sometimes get out of hand. When this happens, it can adversely affect cognitive functions. This is where Huperzine comes in.

Huperzine is a selective AChE inhibitor.^{2 3 4} As such, it is able to allow for higher levels of acetylcholine. The cognitive benefits of this were demonstrated in a double-blind study where a statistically significant improvement was achieved in patients with multi-infarct, senile dementia, and presenile simple memory disorder. The effective dose used in this study was 30 to 50 mcg of Huperzine, twice daily.⁵ Similar research has shown memory, cognition, and behavior improvements in Alzheimer's patients.⁶ Other research has shown that Huperzine has an ability to reduce neuronal cell death (caused by exposure to a toxin)⁷, and has been used in patients with myasthenia gravis (a debilitating disease associated with wasting of muscles).⁸

Vinpocetine

Vinpocetine is a natural substance derived from Periwinkle seeds. Research in Europe has demonstrated that Vinpocetine can help improve cognitive function and short-term memory in both animals and humans.^{9 10 11 12 13} Other research indicates that Vinpocetine is effective for patients with cerebrovascular disease.^{14 15 16} One of Vinpocetine's identified mechanisms of action is improvement in brain circulation and oxygen utilization¹⁷ (although Ginkgo biloba also improves brain circulation, it does not have Vinpocetine's other functions). An improvement in brain circulation means that all of the nutrients that the brain needs to concentrate and function properly, are able to be effectively delivered. Improved oxygen utilization means that the brain should be more effective at producing ATP (the energy "currency" of the body). In fact, research has shown that vinpocetine effectively elevated cerebral concentrations of ATP¹⁸, as well as ATP concentrations in red blood cells.¹⁹ More ATP means more brain energy. More brain energy means an ability to concentrate.

In addition to its circulation and oxygen enhancing properties, another mechanism of Vinpocetine's action is that it seems to work as part of the cholinergic pathway.²⁰ This is the pathway that involves the production of the memory neurotransmitter, acetylcholine. Specifically, Vinpocetine increase the firing rate of certain nerve cells.²¹

Finally, Vinpocetine is a remarkable safe substance. Miskolczi, P., et al, concluded that there is no accumulation or autoinduction of Vinpocetine at doses up to 30 mg daily.²² Other research has also shown that Vinpocetine has no serious side effects.²³ Actually, Vinpocetine is not only safe, it is actually an effective antioxidant against free radicals and other toxic substances.^{24 25} Human research on Vinpocetine has utilized around 10 to 15 mg daily.

Conclusion

Huperzine inhibits AchE, which increases levels of the memory neurotransmitter acetylcholine. Vinpocetine increases cerebral oxygen and concentrations of ATP, and the firing rate of neurons associated with acetylcholine. These functions may help improve memory and mental energy, and are complimentary to the circulation-enhancing functions of Ginkgo biloba.

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