



## ND FORMULAS

# MemPro

- Provides Protection for Neurons from Free Radical Damage
- Enhances Cerebral Blood Flow and Cognitive Health
- Provides Targeted Antioxidant Support for the Brain

This product is designed to support and protect cognitive function and health. The formula includes 120 mg of standardized ginkgo biloba extract, 30 mg of vinpocetine and 100 mcg of huperzine A from Chinese club moss (*Huperzia serrata*), which work together to provide synergistic benefits for cognition and optimal protection for neurons.

### Overview

Maintaining cognitive function is an increasingly important challenge with the aging United States population. Aging is often associated with functional changes in the brain that can affect event recall ability, thought organization, and ability for self-expression. While some memory loss is common in the aging population, factors such as free-radical damage, nutrient deficiencies, lifestyle choices, and emotional stress are known to affect cognition as we grow older. The brain is part of the nervous system, which is made up of neurons responsible for processing and transmitting information using neurotransmitters and electrical ion channels. Neurotransmitter receptors are the gateways for communication between nerve cells. Maintaining the function of these various aspects of neuron communication is integral to maintaining good cognitive function. Since neurons do not undergo cell division, protecting them from damage is essential. Furthermore, maintaining optimal blood flow to neurons is also important in maintaining their health. This product provides vinpocetine and ginkgo biloba to support cerebral blood circulation, decrease excitotoxicity and scavenge damaging free radicals. In addition, vinpocetine has specifically been shown to inhibit phosphodiesterase, which plays a role in increasing cerebrovascular blood flow and improving memory. Together with huperzine A, a potent acetylcholine sparing nutrient, this product provides

optimal dosages of three of the most well-studied ingredients for targeted, multidimensional cognitive support.

### Ginkgo Biloba<sup>†</sup>

Ginkgo biloba extract is the most well-studied botanical for cognitive support. In addition to protecting overall neuronal function, ginkgo increases cerebral blood flow, and protects neurons from a variety of hypoxic conditions and oxidant-induced damage.<sup>1,2</sup> In addition, ginkgo scavenges nitric oxide species (NOS) and reactive oxygen species (ROS), supports mitochondrial function, and inhibits NMDA receptor activation by reducing the overstimulation of neurons that cause brain fatigue. Ginkgo has also been found to antagonize the platelet activating factor (PAF), a vasoconstrictor, and stimulate the release of NOS, increasing cerebral blood flow.<sup>3</sup> Ginkgo has been shown to support memory in animal and human models.<sup>4</sup> In a 14-day, double-blind study on the cognitive effects of a nutrient compound containing ginkgo biloba among 24 normal adults, a reliable 50 ms response time decrease was observed between the placebo and ginkgo biloba testing, suggesting that ginkgo supports short-term working memory processing in normal adults.<sup>5</sup>

### Vinpocetine<sup>†</sup>

Synthesized from tabersonine, a natural extract from the seeds of the West African plant *Voacanga africana*, vinpocetine has recently been the subject of research related to cognitive health because of its neuroprotective mechanisms,<sup>6</sup> including its antioxidant, and vasodilating activities.<sup>7</sup> Vinpocetine has the ability to cross the blood brain barrier,<sup>8</sup> and has vasorelaxant effects on cerebral smooth muscle tissue. In one 12-week study, a significant improvement was found in cognitive

functions after subjects were given oral vinpocetine therapy using psychometric tests.<sup>9</sup> Specifically, vinpocetine has also been shown to improve oxygen-release from hemoglobin, helping to maintain red blood cell flexibility, allowing the cells to pass more easily through tiny capillaries.<sup>10</sup> Furthermore, studies have shown vinpocetine moderates the excitotoxicity of neurotransmitters, enhancing nerve cell health by inhibiting sodium channels and reducing intracellular calcium levels.<sup>11</sup>

### Huperzine A<sup>†</sup>

A purified component derived from Chinese club moss, huperzine A has been found to support healthy cognition in a range of animal models, and phase IV clinical trials demonstrated its promotion of improved recall and cognition in elderly subjects.<sup>12</sup> As a potent and selective acetylcholinesterase inhibitor, huperzine A helps to improve memory and support optimal cognitive health. A multicenter, prospective, double-blind, placebo-controlled and randomized study gave 50 patients 0.2 mg of huperzine A and compared them to a group given a placebo for eight weeks. They found that 58% (29/50) of patients treated with huperzine A showed improvements in their memory, cognitive and behavioral functions.<sup>13</sup> A second double-blind and matched pair study looked at 34 pairs of middle school students complaining of memory inadequacy and divided them into two groups by psychological health inventory (PHI), similar memory quotient and same sex and class. After four weeks, the huperzine A group, (50 mcg twice a day) showed twice the improvement of the placebo group.<sup>14</sup>

### Dosage

1 capsule per day or as recommended by your health care professional.

### Does Not Contain

Gluten, yeast, artificial colors and flavors.

### Cautions

This product should not be taken by women who are pregnant, nursing or who intend to become pregnant. Consult your physician for further information.

<b>Supplement Facts</b> <sup>V2</sup>		
Serving Size 1 capsule		
Servings Per Container 30		
<b>1 capsule contains</b>	<b>Amount Per Serving</b>	<b>% Daily Value</b>
<i>Ginkgo biloba</i> USP (Powdered Ginkgo Extract) (Leaf) (Standardized to contain 22% Flavonol Glycosides and 5.4% Terpene Lactones)	120 mg	*
Vinpocetine	30 mg	*
Huperzine Alkaloids (from <i>Huperzia serrata</i> Leaf Extract)	100 mcg	*
* Daily Value not established		

## References

1. Ahlemeyer B, Krieglstein J. Neuroprotective effects of Ginkgo biloba extract. *Cell Mol Life Sci*. 2003 Sep;60(9):1779-92.
2. Ahlemeyer B, Krieglstein J. Pharmacological studies supporting the therapeutic use of Ginkgo biloba extract for Alzheimer's disease. *Pharmacopsychiatry*. 2003 Jun;36 Suppl 1:S8-14. Review.
3. Ponto LL, Schultz SK. Ginkgo biloba extract: review of CNS effects. *Ann Clin Psychiatry*. 2003 Jun;15(2):109-19.
4. Sierpina VS, Wollschlaeger B, Blumenthal M. Ginkgo biloba. *Am Fam Physician*. 2003 Sep 1;68(5):923-6.
5. Polich J, Gloria R. Cognitive effects of a Ginkgo biloba/vinpocetine compound in normal adults: systematic assessment of perception, attention and memory. *Hum Psychopharmacol*. 2001 Jul;16(5):409-416.
6. Vinpocetine monograph. *Alternative Medicine Review*. 2002 Volume 7, No. 3.
7. Bagoly E, Fehér G, Szapáry L. [The role of vinpocetine in the treatment of cerebrovascular diseases based in human studies]. *Orv Hetil*. 2007 Jul 22;148(29):1353-8. [Article in Hungarian].
8. Bonoczk P et al. Role of sodium channel inhibition in neuroprotection: effect of vinpocetine. *Brain Res Bull*. 2000 Oct;53(3):245-54. Review.
9. Valikovics A. [Investigation of the effect of vinpocetine on cerebral blood flow and cognitive functions]. [Article in Hungarian] *Ideggyogy Sz*. 2007 Jul 30;60(7-8):301-10.
10. Tohgi H, Sasaki K, Chiba K, Nozaki Y. *Arzneimittelforschung*. 1990 Jun;40(6):640-3.
11. Sitges M, Nekrassov V. Vinpocetine selectively inhibits neurotransmitter release triggered by sodium channel activation. *Neurochem Res*. 1999 Dec;24(12):1585-91.
12. Wang R, Yan H, Tang XC. Progress in studies of huperzine A, a natural cholinesterase inhibitor from Chinese herbal medicine. *Acta Pharmacol Sin*. 2006 Jan;27(1):1-26. [PMID: 16364207].
13. Xu SS et al. Efficacy of tablet huperzine-A on memory, cognition, and behavior in Alzheimer's disease. *Zhongguo Yao Li Xue Bao*. 1995 Sep;16(5):391-5.
14. Sun QQ, Xu SS, Pan JL, Guo Hm, Cao WQ. Huperzine- A capsules enhance memory and learning performance in 34 pairs of matched adolescent students. *Chung Kuo Yao Li Hsueh Pao*. 1999 Jul;20(7):601-3.