CogniAid™ is formulated as an herbal alternative or as a companion product to our nutrient-based brain support product Brain Vitale™. While Brain Vitale’s formulation primarily focuses on supplying the brain with nutrients and compounds that support optimal brain function and overall brain health, CogniAid™ supplies herbs and extracts that have been shown to work through a variety of mechanisms including acetylcholinesterase inhibitory activity, enhancing nerve impulse transmission, aiding in the repair of damaged neurons, and decreasing Aβ protein aggregation, among others; which help to support those with cognitive impairments, such as Alzheimer's disease and vascular dementia.

**Highlights**

**Huperzine A (HupA)** is a naturally-occurring alkaloid compound found in the club moss Huperzia serrata, which upon ingestion acts as an acetylcholinesterase inhibitor. The deficiency in cholinergic neurotransmission in Alzheimer’s disease (AD), among other mechanisms, can lead to symptoms of this disease. Acetylcholinesterase inhibitors act to increase available acetylcholine through the inhibition of the enzyme acetylcholinesterase. Improved cholinergic neurotransmission can manifest in stabilization or a less than expected decline in cognition, function and behavior.1, 2

HupA has been shown to ameliorate learning and memory deficiencies in animal models and AD patients by its modification of beta-amyloid peptide processing, reduction of oxidative stress, neuronal protection against apoptosis, and regulation of the expression and secretion of nerve growth factor (NGF) and NGF signaling. Finally, HupA can significantly improve the cognitive function in patients with mild to moderate vascular dementia because it acts as a selective inhibitor of acetylcholinesterase and it improves brain cell mitochondrial function which, when combined with the above properties, indicates that HupA can act as a neuroprotective agent.3-6

The green tea polyphenol epigallocatechin-3-gallate or EGCg has been found to enhance and prolong the inhibitory time of HupA on acetylcholinesterase through the increasing affinity of HupA with the transport protein serum albumin. In addition to EGCg's antioxidative properties, the enhanced transport of HupA is a possible mechanism for the observed enhanced effect of EGCg on HupA bioactivity.7, 8

Long-term consumption of blueberry polyphenols and flavonoids has been shown to improve and even reverse cognitive decline in animal studies, as these plant-based compounds can accumulate in the central nervous system. While acting as a potent antioxidant, blueberry extract can positively impact learning and memory in aged animals, while also acting to reduce stress-related cell signaling and increasing the capacity of neurons to maintain proper functioning during the aging process.9
Blueberry consumption also plays a role in the reduction of amyloid β protein (Aβ) aggregation and subsequent synaptic failure. Aβ is the main component of amyloid plaques, which can disrupt mitochondrial function and lead to neuronal cell death. Pathological levels of amyloid plaques are found in the brains of Alzheimer’s patients.\textsuperscript{10,11} Also, the significant cognitive enhancement provided by blueberries is closely related to higher brain antioxidant production of glutathione and the inhibition of acetylcholinesterase activity.\textsuperscript{12}

This product contains a wildcrafted blueberry complex, a novel berry extract which uses extracts of huckleberries and bilberries in addition to blueberries.

\textbf{Bacopa monnieri} is a well-known and frequently used remedy in India and has been used as a nerve tonic in Ayurvedic medicine since the 6th century. It is described as “enhancing the mind” and is considered to promote improved mental function. As such, most modern research has focused on the mechanisms behind these properties. Active compounds, including triterpenoid saponins and their bacosides, are responsible for bacopa’s ability to enhance nerve impulse transmission. The bacosides aid in the repair of damaged neurons by enhancing protein kinase activity, neuronal synthesis, reduction of beta amyloid levels, restoration of synaptic activity, and ultimately the improvement of nerve impulse transmission.\textsuperscript{13,14}

In human trials Bacopa monnieri has demonstrated improvements in various parameters of cognitive function in patients with Alzheimer’s disease, including orientation of place, time and person, reading comprehension, and other parameters of memory, attention and mood.\textsuperscript{15} In healthy older adults Bacopa was also shown to improve various markers of cognitive function.\textsuperscript{16}

\textbf{Vinpocetine} is a highly potent vasodilator, acting by direct relaxation of the vascular smooth muscle. Vinpocetine enhances cerebral blood flow in patients with cerebrovascular disorders.\textsuperscript{17} Vinpocetine has been shown to cross the blood brain barrier, protect neurons from the toxicity of glutamate and N-methyl-d-aspartate (NMDA), decrease platelet and red blood cell aggregation, and increase red blood cell membrane flexibility in stroke patients as well as in healthy subjects. In those patients suffering from mild to moderate vascular dementia, vinpocetine benefited memory, learning, and global clinical measures of cognitive performance.\textsuperscript{18}

In three studies of older adults with memory problems associated with poor brain circulation or dementia-related disease, vinpocetine produced significantly more improvement than a placebo in performance on global cognitive tests reflecting attention, concentration, and memory.\textsuperscript{19}

\textbf{Mechanisms of Action}

\begin{itemize}
  \item Assists in inhibition of acetylcholinesterase: Huperzine A, EGCg, Wildcrafted Blueberry Complex
  \item Reduces brain accumulation of beta amyloid: Huperzine A, Wildcrafted Blueberry Complex, Bacopa monnieri
  \item Provides antioxidant properties: Huperzine A, EGCg, Wildcrafted Blueberry Complex, Bacopa monnieri, Vinpocetine
  \item Improves cerebral blood flow: Vinpocetine
  \item Neuroprotective properties: Huperzine A, Wildcrafted Blueberry Complex, Bacopa monnieri, Vinpocetine
  \item Enhancement of neuron function: Wildcrafted Blueberry Complex, Bacopa monnieri
\end{itemize}

\textbf{How to take:}

\begin{itemize}
  \item Take two capsules per day with meals, or as directed by your health care practitioner.
\end{itemize}

For a list of references cited in this document, click on the related research link http://mkt.s.designsforhealth.com/techsheets/CogniAid_References.pdf

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