

Role of Bacopa Monnieri and Bacosides in Modulating Alzheimer Disease Pathophysiology

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Abstract

Alzheimer's Disease (AD) is an accumulative degenerative brain disorder that is characterized by symptoms of progressive cognitive deterioration, as well as an associated deterioration in memory function, and diminished performance of affected neuronal cells. Current treatment options only provide some symptom relief and often come with undesirable side effects thereby creating the need for safer, more effective therapies. Bacopa monnieri is a popular medicinal herb used traditionally in Ayurvedic medicine that has recently been suggested to have neuroprotective benefits related to AD. Bacopa contains a class of bioactive compounds called bacosides that are believed to be responsible for its cognitive enhancement properties.

Several lines of evidence have shown that Bacopa monnieri provides multiple pharmacological activities related to Alzheimer's disease (AD) pathophysiology. These include:

- Inhibition of acetylcholinesterase activity
- Reducing the formation of beta-amyloid plaques
- Decreasing levels of oxidative damage.

Bacopa has also been shown to increase synaptic transmission and stimulate the repair of damaged neurons, improving the memory and learning abilities of both animals and humans who have been studied using Bacopa extracts.

Additional to the improvement of cognition, Bacopa's antioxidant and anti-inflammatory properties serve to protect neuronal cells from degeneration. Compared with traditional therapies, Bacopa monnieri is virtually free of any toxicity, making it an excellent candidate for long-term use. In summary, this review identifies Bacopa monnieri's therapeutic properties and its potential as a natural multi-functional therapy for Alzheimer's disease.

Keywords

Alzheimer Disease, Bacopa monnieri, Neuroprotection, Bacosides, Acetylcholinesterase inhibition, cognitive enhancement.