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AMERICAN
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File: ■ Bacopa (*Bacopa monnieri*)
■ Cognitive Function
■ Nootropic Effects

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RE: Cognitive-enhancing Effects of Bacopa in Healthy Adults

Stough C, Downey LA, Lloyd J, et al. Examining the nootropic effects of a special extract of *Bacopa monniera* [sic] on human cognitive functioning: 90 day double-blind placebo-controlled randomized trial. *Phytother Res.* 2008;22:1629-1634.

Bacopa (*Bacopa monnieri*)—a traditional Ayurvedic medicine with reported memory-enhancing, anti-inflammatory, analgesic, antipyretic, sedative, and antiepileptic properties—contains many active ingredients, including saponins, alkaloids, sitosterols, stigmaterols, D-mannitol, and betulic acid. The memory-enhancing effects of bacopa extracts have attracted much attention and have been attributed to 2 saponins: bacosides A and B. These saponins were shown previously to facilitate avoidance response in rats and to reverse the amnesic effects of neurotoxin, immobilization stress, scopolamine, and electroshock. The mechanism responsible for the memory-enhancing effects of bacopa is unknown; however, evidence suggests that it may be related to changes in cholinesterase activity or to antioxidant effects (e.g., lipid peroxidation chain action breaker). Although the results of animal studies, 2 single-blind studies, and 1 double-blind placebo-controlled study support the memory-enhancing effects of bacopa, additional studies are needed to confirm the efficacy of this product and to determine the optimal dose before clinical applications can be considered, which was the focus of the present study.

Healthy volunteers (n = 107) aged 18-60 years with no history of dementia, psychiatric disorders, neurologic disease, chronic illness or infection, or endocrine, gastrointestinal, or bleeding disorders were recruited for this double-blind, placebo-controlled randomly assigned study. The subjects consumed either 2 capsules of placebo or bacopa extract (KeenMind®; Keen Healthy Pty. Ltd.; India) twice daily for 90 days. The extract was standardized for bacosides A and B (no less than 55% of combined bacosides), and each capsule contained 150 mg of bacopa extract (20:1) equivalent to 3 g of dried herb. The subjects completed a battery of cognitive tests from the Cognitive Drug Research (CDR) computerized assessment system—designed to assess 5 cognitive factor outcomes (speed and accuracy of attention, speed of memory, accuracy of attention, secondary memory, and working memory)—at baseline and after 90 days of supplementation with placebo or bacopa extract. Research nurses monitored the subjects weekly for positive and negative symptoms associated with treatment.

Of the 5 cognitive factor outcomes, only working memory improved significantly ($P = 0.035$) after treatment with bacopa. Specifically, performance on the Spatial Working Memory task of the CDR improved significantly ($P = 0.051$) and performance on the Rapid Visual Information Processing task of the CDR improved significantly ($P = 0.029$) in the bacopa group. Over the 90-day treatment period, the bacopa group reported a significantly greater incidence of diarrhea and increased energy and a decrease in the number of dreams. The placebo group reported a greater incidence of problems with their teeth and gums. None of the other negative and positive symptoms reported were significantly different between the 2 groups, which indicated that both treatments were "reasonably well tolerated" by both groups.

Chronic treatment (90 days) with bacopa resulted in a significant improvement in some of the tasks associated with working memory, whereas placebo treatment did not. Although significant improvements in most of the tasks were not observed, the results of many of the statistical analyses trended toward an improvement in cognitive function in the areas of attention, working memory, and psychomotor tasks. These results corroborate the findings of 2 previously published studies that reported cognitive-enhancing effects of bacopa after 90 days of treatment.^{1,2} The authors conclude that additional studies are needed to "ascertain the effective dosage range, time required to attain therapeutic levels and effects over a longer term of administration."

—Brenda Milot, ELS

References

¹Stough C, Lloyd J, Clarke J, et al. The chronic effects of an extract of *Bacopa monniera* [sic] (Brahmi) on cognitive function in healthy human subjects. *Psychopharmacology*. 2001;156:481-484.

²Roodenrys S, Booth D, Bulzoni S, Phipps A, Micallef C, Smoker J. Chronic effects of Brahmi (*Bacopa monnieri*) on human memory. *Neuropsychopharmacology*. 2002;27:279-281.

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