

Bacopa Monnieri

[J Ethnopharmacol](#). 2014;151(1):528-35. doi: 10.1016/j.jep.2013.11.008. Epub 2013 Nov 16.

Meta-analysis of randomized controlled trials on cognitive effects of Bacopa monnieri extract.

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Abstract

ETHNOPHARMACOLOGICAL RELEVANCE:

Bacopa monnieri has a long history in Ayurvedic medicine for neurological and behavioral defects. To assess its efficacy in improving cognitive function.

MATERIALS AND METHODS:

MEDLINE, EMBASE, CINAHL, AMED, Cochrane Central of clinical trial, WHO registry, Thai Medical Index, Index Medicus Siriraj library and www.clinicaltrial.gov were searched from the inception date of each database to June 2013 using scientific and common synonyms of Bacopa monnieri, cognitive performance or memory. The reference lists of retrieved articles were also reviewed. Randomized, placebo controlled human intervention trials on chronic ≥ 12 weeks dosing of standardized extracts of Bacopa monnieri without any co-medication were included in this study. The methodological quality of studies was assessed using Cochrane's risk of bias assessment and Jadad's quality scales. The weighted mean difference and 95% confidence interval (95% CI) were performed using the random-effects model of the Dersimonian-Laird method.

RESULTS:

Nine studies met the inclusion criteria using 518 subjects. Overall quality of all included trials was low risk of bias and quality of reported information was high. Meta-analysis of 437 eligible subjects showed improved cognition by shortened Trail B test (-17.9 ms; 95% CI -24.6 to -11.2; $p < 0.001$) and decreased choice reaction time (10.6 ms; 95% CI -12.1 to -9.2; $p < 0.001$).

CONCLUSION:

This meta-analysis suggests that Bacopa monnieri has the potential to improve cognition, particularly speed of attention but only a large well designed 'head-to-head' trial against an existing medication will provide definitive data on its efficacy on healthy or dementia patients using a standardized preparation.

[Phytother Res](#). 2014 Apr;28(4):551-9. doi: 10.1002/ptr.5029. Epub 2013 Jun 21.

An acute, double-blind, placebo-controlled cross-over study of 320 mg and 640 mg doses of Bacopa monnieri(CDRI 08) on multitasking stress reactivity and mood.

[Benson S](#)¹, [Downey LA](#), [Stough C](#), [Wetherell M](#), [Zangara A](#), [Scholey A](#).

Abstract

Little research exists in humans concerning the anxiolytic, antidepressant, sedative, and adaptogenic actions the traditional Ayurvedic medicine Bacopa monnieri (BM) possesses in addition to its documented

cognitive-enhancing effects. Preclinical work has identified a number of acute anxiolytic, nootropic, and adaptogenic effects of BM that may also co-occur in humans. The current double-blind, placebo-controlled cross-over study assessed the acute effects of a specific extract of BM (KeenMind® - CDRI 08) in normal healthy participants during completion of a multitasking framework (MTF). Seventeen healthy volunteers completed the MTF, at baseline, then 1 h and 2 h after consuming a placebo, 320 mg BM and 640 mg of BM. Treatments were separated by a 7-day washout with order determined by Latin Square. Outcome measures included cognitive outcomes from the MTF, with mood and salivary cortisol measured before and after each completion of the MTF. Change from baseline scores indicated positive cognitive effects, notably at both 1 h post and 2 h post BM consumption on the Letter Search and Stroop tasks, suggesting an earlier nootropic effect of BM than previously investigated. There were also some positive mood effects and **reduction in cortisol levels**, pointing to a physiological mechanism for stress reduction associated with BM consumption. It was concluded that acute BM supplementation produced some adaptogenic and nootropic effects that need to be replicated in a larger sample and in isolation from stressful cognitive tests in order to quantify the magnitude of these effects. The study was registered with the Australian and New Zealand Clinical Trials Registry (ACTRN12612000834853).

[Evid Based Complement Alternat Med.](#) 2012;2012:606424. doi: 10.1155/2012/606424. Epub 2012 Dec 18.

Effects of 12-Week Bacopa monnieri Consumption on Attention, Cognitive Processing, Working Memory, and Functions of Both Cholinergic and Monoaminergic Systems in Healthy Elderly Volunteers.

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Abstract

At present, the scientific evidence concerning the effect of Bacopa monnieri on brain activity together with working memory is less available. Therefore, we aimed to determine the effect of B. monnieri on attention, cognitive processing, working memory, and cholinergic and monoaminergic functions in healthy elderly. A randomized double-blind placebo-controlled design was utilized. Sixty healthy elderly subjects (mean age 62.62 years; SD 6.46), consisting of 23 males and 37 females, received either a standardized extract of B. monnieri (300 and 600 mg) or placebo once daily for 12 weeks. The cholinergic and monoaminergic systems functions were determined using AChE and MAO activities. Working memory was assessed using percent accuracy and reaction time of various memory tests as indices, whereas attention and cognitive processing were assessed using latencies and amplitude of N100 and P300 components of event-related potential. All assessments were performed before treatment, every four weeks throughout study period, and at four weeks after the cessation of intervention. B. monnieri-treated group showed improved working memory together with a decrease in both N100 and P300 latencies. The suppression of plasma AChE activity was also observed. These results suggest that B. monnieri can improve attention, cognitive processing, and working memory partly via the suppression of AChE activity.

[J Altern Complement Med.](#) 2008 Jul;14(6):707-13. doi: 10.1089/acm.2008.0018.

Effects of a standardized Bacopa monnieri extract on cognitive performance, anxiety, and depression in the elderly: a randomized, double-blind, placebo-controlled trial.

[Calabrese C¹](#), [Gregory WL](#), [Leo M](#), [Kraemer D](#), [Bone K](#), [Oken B](#).

Abstract

OBJECTIVES:

Study aims were to evaluate effects of Bacopa monnieri whole plant standardized dry extract on cognitive function and affect and its safety and tolerability in healthy elderly study participants.

DESIGN:

The study was a randomized, double-blind, placebo-controlled clinical trial with a placebo run-in of 6 weeks and a treatment period of 12 weeks.

SETTING/LOCATION:

Volunteers were recruited from the community to a clinic in Portland, Oregon by public notification.

SUBJECTS:

Fifty-four (54) participants, 65 or older (mean 73.5 years), without clinical signs of dementia, were recruited and randomized to Bacopa or placebo. Forty-eight (48) completed the study with 24 in each group.

INTERVENTIONS:

Standardized B. monnieri extract 300 mg/day or a similar placebo tablet orally for 12 weeks.

OUTCOME MEASURES:

The primary outcome variable was the delayed recall score from the Rey Auditory Verbal Learning Test (AVLT). Other cognitive measures were the Stroop Task assessing the ability to ignore irrelevant information, the Divided Attention Task (DAT), and the Wechsler Adult Intelligence Scale (WAIS) letter-digit test of immediate working memory. Affective measures were the State-Trait Anxiety Inventory, Center for Epidemiologic Studies Depression scale (CESD)-10 depression scale, and the Profile of Mood States. Vital signs were also monitored.

RESULTS:

Controlling for baseline cognitive deficit using the Blessed Orientation-Memory-Concentration test, Bacopa participants had enhanced AVLT delayed word recall memory scores relative to placebo. Stroop results were similarly significant, with the Bacopa group improving and the placebo group unchanged. CESD-10 depression scores, combined state plus trait anxiety scores, and heart rate decreased over time for the Bacopa group but increased for the placebo group. No effects were found on the DAT, WAIS digit task, mood, or blood pressure. The dose was well tolerated with few adverse events (Bacopa n = 9, placebo n = 10), primarily stomach upset.

CONCLUSIONS:

This study provides further evidence that B. monnieri has potential for safely enhancing cognitive performance in the aging.

[Neuropsychopharmacology](#). 2002 Aug;27(2):279-81.

Chronic effects of Brahmi (Bacopa monnieri) on human memory.

[Roodenrys S¹](#), [Booth D](#), [Bulzomi S](#), [Phipps A](#), [Micallef C](#), [Smoker J](#).

Abstract

A study is reported on the effects of Brahmi (Bacopa monniera) on human memory. Seventy-six adults aged between 40 and 65 years took part in a double-blind randomized, placebo control study in which various memory functions were tested and levels of anxiety measured. There were three testing sessions:

one prior to the trial, one after three months on the trial, and one six weeks after the completion of the trial. The results show a significant effect of the Brahmi on a test for the retention of new information. Follow-up tests showed that the rate of learning was unaffected, suggesting that Brahmi decreases the rate of forgetting of newly acquired information. Tasks assessing attention, verbal and visual short-term memory and the retrieval of pre-experimental knowledge were unaffected. Questionnaire measures of everyday memory function and anxiety levels were also unaffected.

[J Ethnopharmacol.](#) 2010 Jan 8;127(1):26-31. doi: 10.1016/j.jep.2009.09.056. Epub 2009 Oct 4.

Cognitive enhancement and neuroprotective effects of *Bacopa monnieri* in Alzheimer's disease model.

[Uabundit N¹](#), [Wattanathorn J](#), [Mucimapura S](#), [Ingkaninan K](#).

Abstract

ETHNOPHARMACOLOGICAL RELEVANCE:

Bacopa monnieri (L.) Wettst., a plant belonging to the family Scrophulariaceae, has been used in the traditional system of Ayurvedic medicine to improve intelligence and memory for a long time. Therefore, the potential of this plant to protect against Alzheimer's disease has been raised but less supported document is available.

AIM OF THE STUDY:

To determine the effect of alcoholic extract of *Bacopa monnieri* on cognitive function and neurodegeneration in animal model of Alzheimer's disease induced by ethylcholine aziridinium ion (AF64A).

MATERIALS AND METHODS:

Male Wistar rats were orally given the alcoholic extract of *Bacopa monnieri* at doses of 20, 40 and 80 mg/kg BW via feeding needle for a period of 2 weeks before and 1 week after the intracerebroventricular administration of AF64A bilaterally. Rats were tested for spatial memory using Morris water maze test and the density of neurons and cholinergic neurons was determined using histological techniques 7 days after AF64A administration.

RESULTS:

Bacopa monnieri extract improved the escape latency time ($p < .01$) in Morris water maze test. Moreover, the reduction of neurons and cholinergic neuron densities were also mitigated.

CONCLUSION:

These findings suggest that *Bacopa monnieri* is a potential cognitive enhancer and neuroprotectant against Alzheimer's disease.