**IMPROVING MEMORY AND LEARNING IN ADULTS**

The chronic effects of KeenMind® CDRI 08® on cognitive function in healthy human subjects*

**Abstract:** Extracts of *Bacopa monnieri* have been reported to exert cognitive enhancing effects in animals. However, the effects on human cognition are inconclusive. This study examined the chronic effects of a special extract of *Bacopa monnieri* (KeenMind® CDRI 08®) on cognitive function in healthy human subjects.

**Methods:** The study was a double-blind, placebo-controlled, independent-group design in which 46 healthy adult volunteers aged between 18 and 60 years were randomly allocated to one of two treatment conditions, KeenMind® (2 capsules) or placebo. Neuropsychological testing was conducted pre drug administration (baseline), and at 5 and 12 weeks post drug administration.

**Results:** KeenMind® significantly improved speed of visual information processing measured by the IT task, learning rate, and memory consolidation measured by the AVLT (P<0.05), compared to placebo, with maximal effects evident after 12 weeks.

**Conclusions:** These findings suggest that KeenMind® may improve higher order cognitive processes that are critically dependent on the input of information from our environment such as learning and memory.


**DECREASING FORGETFULNESS IN HEALTHY MATURE ADULTS**

Chronic Effects of KeenMind® CDRI 08® on Human Memory*

**Abstract:** The aim of this study was to examine the effects of an extract of *Bacopa monnieri* (KeenMind® CDRI 08®) on cognitive function.

**Methods:** Seventy-six adults aged between 40 and 65 years took part in a double-blind, randomized, placebo-controlled study in which various memory functions were tested. 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.

**Results:** Significant effect of KeenMind® on a test for the retention of new information. Follow-up tests showed that the rate of learning was unaffected, suggesting that KeenMind® decreases the rate of forgetting of newly acquired information.

**Conclusions:** There was a significant effect on a task requiring the retention of new information: the recall of unrelated word pairs after a short delay. The effect appears to be a reduction in the amount of information lost from memory. When combined with the finding of improved retention of information in this study, this suggests that the effect of KeenMind® may be mediated by antioxidant action within the hippocampus.


**LONG-TERM COGNITIVE ENHANCEMENT IN ADULTS**

Examining the Nootropic Effects of KeenMind® on Human Cognitive Functioning: 90 day Double-Blind Placebo-Controlled Randomized Trial*

**Abstract:** While Ayurvedic medicine has touted the cognitive enhancing effects of *Bacopa monnieri* for centuries, there is a need for double-blind, placebo-controlled investigations.

**Methods:** One hundred and seven healthy participants aged between 18 and 60 years were recruited for this double-blind, placebo-controlled, independent group design investigation. Sixty-two participants completed the study with 80% treatment compliance. Neuropsychological testing using the Cognitive Drug Research cognitive assessment system was conducted at baseline and after 90 days of treatment with KeenMind® (2 capsules) or placebo.

**Results:** KeenMind® significantly improved performance on the ‘Working Memory’ factor, more specifically spatial working memory accuracy. The number of false-positives recorded in the rapid visual information processing task was also reduced for the KeenMind® group following the treatment period.
Conclusions: This study provides support for previous studies reporting cognitive enhancing effects in healthy humans after a 90 day administration of KeenMind®. Although there were several tasks that were not significantly improved by KeenMind®, many of the statistical analyses trended towards an improvement in cognitive functioning in areas of attention, working memory, and psychomotor tasks. This study provides evidence that 90 day KeenMind® treatment improves accuracy in more complex cognitive tasks.


SHORT-TERM COGNITIVE ENHANCEMENT IN ADULTS
An Acute, Double-Blind, Placebo-Controlled Crossover Study of 320 mg and 640 mg Doses of KeenMind® CDRI 08® on Sustained Cognitive Performance*

Abstract: Standardized extracts of the traditional Ayurvedic medicine Bacopa monnieri (Brahmi) have been recently shown to have cognitive enhancing effects in chronic administration studies. Pre-clinical work has also identified nootropic effects of Brahmi. There has, however, been little research on the acute effects of Brahmi on cognitive function.

Methods: The study aimed to assess the acute effects of KeenMind® in a double-blind, placebo-controlled study in normal healthy participants who completed a cognitively demanding series of tests. Twenty-four healthy volunteers aged between 18 and 56 years completed six repetitions of the Cognitive Demand Battery (CDB) after consuming a placebo, KeenMind® (2 capsules), or KeenMind® (4 capsules) in a crossover design and provided cardiovascular and mood assessments before and after treatment.

Results: Change from baseline scores indicated that the 2-capsule dose of KeenMind® improved performance at the first, second, and fourth repetition post-dosing on the CDB, and the treatments had no effect upon cardiovascular activity or in attenuating task-induced ratings of stress and fatigue.

Conclusions: 2 capsules of KeenMind® appear to have some acutely enhancing effects upon cognitive functioning even in healthy young individuals (i.e. a genuine nootropic effect). This effect did not appear to be dose related, but could possibly be occurring even earlier than the assessed pharmacological window. The nootropic effect appeared limited to aspects of reasoning and cognitive speed. It was concluded that assessment of an earlier pharmacological window and use of less memory-specific cognitive tests together with more temporally sensitive measures of brain activity may improve our understanding of the acute neurocognitive properties of KeenMind®.

* Downey LA et al. 2012. An acute, double-blind, placebo-controlled crossover study of 320 mg and 640 mg doses of a special extract of Bacopa monnieri (CDRI 08®) on sustained cognitive performance. Phytother. Res., Published online DOI: 10.1002/ptr.4864.

SHORT-TERM EFFECTS ON STRESS AND MOOD IN ADULTS
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

Abstract: Preclinical work on Bacopa monnieri (BM) has identified a number of acute nootropic and adaptogenic effects of BM, as well as on nervousness and stress, that may also co-occur in humans. This 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).

Methods: Seventeen healthy volunteers completed the MTF, at baseline, then 1 h and 2 h after consuming a placebo, 320 mg KeenMind®, and 640 mg of KeenMind®. Outcome measures included cognitive outcomes from the MTF, with scores for alertness, calm, contentedness, nervousness and stress, and cortisol levels.

Results: Positive cognitive effects, notably at both 1 h post and 2 h post KeenMind® on tasks, suggesting an earlier nootropic effect of KeenMind®. Positive mood effects and reduction in cortisol levels, pointing to a physiological mechanism for stress reduction. Acute KeenMind® supplementation produced some adaptogenic and nootropic effects.

Conclusions: It was concluded that acute KeenMind® 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.

STRESS-RELIEVING EFFECTS
Studies on the stress-relieving effect of the medhya rasayan drug Bacopa

Abstract: Previous to this study, Brahmi had been studied repeatedly for its chemical constituents and pharmacological attributes, however had not been subjected to clinical trials in humans.

Methods: Thirty-five volunteers suffering from stress were treated chronically with Brahmi syrup (equivalent to 12 grams of KeenMind® dry herb) taken over two divided doses each day, for four weeks. Patients were assessed weekly on measures of clinical relief, psychological changes, and biochemical changes.

Results: Significant symptomatic relief was observed with regard to stress, mental fatigue, and immediate memory span. It appeared to have stress-relieving and adaptogenic effects.

Conclusions: Clinical effects indicate that Bacopa exerts a stress-relieving effect.


BENEFITS FOR AGE-ASSOCIATED MEMORY DECLINE
Randomized controlled trial of CDRI 08® in age-associated memory decline

Abstract: CDRI 08® has shown enhanced behavioral learning in preclinical studies and enhanced information processing in healthy volunteers. This study is to evaluate the efficacy of CDRI 08® in subjects with age-associated memory decline without any evidence of dementia or psychiatric disorder.

Methods: Double-blind, placebo-controlled randomized study was employed. The subjects received either placebo for 16 weeks or CDRI 08® (1 capsule) twice a day for 12 weeks followed by placebo for another 4 weeks (total duration 16 weeks). Each subject was evaluated for cognition on a battery of tests comprising mental control, logical memory, digit forward, digit backward, visual reproduction, and paired associated learning.

Results: CDRI 08® produced significant improvement on mental control, logical memory, and paired associated learning during the 12 week drug therapy. No serious side effects were observed.

Conclusions: CDRI 08® is a safe and effective drug for age-associated memory decline.


IMPROVING MEMORY AND LEARNING IN CHILDREN
Efficacy of Bacopa monnieri in revitalizing intellectual functions in children

Abstract: An exploratory study to substantiate the efficacy of Bacopa monnieri as a psychotropic.

Methods: Forty school children aged 6 to 8 years were given Bacopa monnieri or placebo three times a day (350 mg total dose) for three months. Patients were assessed on four different tools including WISC Maze, WISC Digit Span Test, Raven’s Colored Progressive Matrices, and Bender Gesialt Test for Children. Results from these tests demonstrate visual-motor and perceptual abilities, as well as memory span.

Results: Enhancing of memory and improvement in learning ability.

Conclusions: Bacopa monnieri is useful for renovating and vitalizing components of intellectual behavior.


These statements have not been evaluated by the Food and Drug Administration.
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