

## A literary study on bramhi and its physiological action over human memory - A medhya rasayana

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### Abstract

Throughout the conventional method of medicine, water hyssop and "Brahmi" are two terms used by the *Bacopa monnieri*. This was commonly used to boost comprehension & recall and to alleviate anxiety or epileptic disorders as a brain tonic. Functional deficiencies in multiple neuropsychiatric disorders and/or behavioral delays may include the usage of nootropics to enhance cognitive ability. Recently, herbal plants have been strongly encouraged to investigate internationally to boost their cognitive capacity, owing to their reduced adverse consequences. Ayurveda provides a number of herbs known for nootropic action as well as their multi-dimensional usefulness under different conditions. Brahmi has been mentioned as medhya rasayan. The physiological activity of Brahmi is vast on human body but most famously it is used to enhance memory power.

**Keywords:** *Brahmi*, physiological activity, memory

### Introduction

*Charaka Samhita* has described *Brahmi* as efficacious in loss of intellect and memory<sup>[1]</sup>. It is classified as a "*Medhya Rasayan*". Drugs used to improve memory and intellect has been used by *Ayurvedic* medical practitioners in India for almost many centuries. Brahmi have been used in different formulations which are used in various disorders in traditional system of medicine and modern researchers supports that some natural compound present in it act as Nootropic activity<sup>[2]</sup>. Active ingredients of *Brahmi* known as bacosides, which are responsible for improving memory, related disorders, and enhance efficiency of transmission of nerve impulse there by strengthening memory and cognition<sup>[3]</sup>. The increasing demand of herbal medicine in recent years is observed which may be due to lesser side effect in comparison to recent synthetic drugs. To overcome this solution pharmaceutical industry develops *in vitro* system for production of medicinal plants and their extracts<sup>[4]</sup>.

### Explanation of Plant

*Bacopa monnieri* (Brahmi) is recommended as the mental health treatment remedy (reduction) contributing to insanity, which is the first direct connection to Brahmi's improvement throughout knowledge. A thin, crackling herb with several roots, narrow oblong feed leaves, and light violet flowers is the *Bacopa monnieri*, a member of the Scrophulariaceae genus. It usually develops in moist fields, shallow water and ponds in India and the tropics. This can also be found in Nepal, South American Countries, Srilanka, India, Taiwan, Thailand, Florida and the USA. In warm areas in Asia, Europe, America and Africa, it is generally spread and has been studied historically recognized as Brahmi or Indian water hyssop<sup>[5]</sup>. The herb is situated in the heights from the sea to 4,400 feet and can be cultivated easily when ample water is available. Flowers and fruits grow during summer and for medicinal purposes the entire plant is used<sup>[6]</sup>.

### (Physiological effect of Brahmi on different organs of the body)

#### 1. Brahmi used as an enhancer of Brain Memory<sup>[7]</sup>

Medhya Rasayana is a collection of nootropic herbs (i.e. cognition-enhancing) with numerous advantages and a common cure for all sorts of neurological anomalies. If it's knowledge, concentration, intellect, imagination, perception or thinking abilities, this ayurvedic herb bring vital nutrients to the brain and further boost the capacity of recall, attention, and comprehension.

#### 2. Brahmi on Cerebral Blood Flow

Artery conditions such as atherosclerosis, reduced artery capacity, and cerebral perfusion have been linked with mental diseases. Mental diseases is mainly correlated with prefrontal cortex, amygdala, and regions of the brain that are prone to neuronal dysfunction<sup>[8]</sup>.

#### 3. Brahmi on Neuronal and Glial Plasticity

Neuronal or glial plasticity is the capacity of the brain to respond to stress, and requires dynamic mechanisms such as the re-arrangement of neuronal associations and the neuron network<sup>[9]</sup>. Brahmi can give strength to brain to respond against stress.

#### 4. Brahmi Used as a Medhya Rasayana<sup>[10]</sup>.

##### a. Remembering

This is a mechanism through which a person collects and retrieves knowledge from the brain. The powerful Medhya Rasayana herbs play a vital role in enhancing brain integration, encoding and knowledge retrieval capabilities.

##### b. Retention

It is the capacity of the memory that allows a person to hang on to previous memories and to remember them when appropriate. Brahmi boost memory processing ability and make us recall the past.

### c. Acquisition

A brain resource to acquire more information and discover new stuff every day. Brahmi (Medhya Rasayana) improve one's learning capability.

### 5. Action of Brahmi on mental disorders <sup>[11]</sup>

Brahmi also exhibits anti-epileptic properties as demonstrated by the decrease in dopamine rates in the frontal cortical area of the rat brain (Jash and Chowdary, 2014). Their findings indicate that Brahmi might have the property to alleviate the beneficial effects of schizophrenia.

### 6. Relaxant effects on smooth and heart muscles <sup>[12]</sup>

Research into the potential of CDRI-08 (Keen Mind) in calming cardiac and smooth muscles has been demonstrated in laboratory animals. Herbal extract ameliorates left ventricular contractility, coronary blood flow and heart rate in the heart of rabbits (Rashid *et al.* 1990). It also relaxes the smooth bronchial muscles, pulmonary arteries, aorta and trachea apparently, the mechanism of action Brahmi exerts on the heart muscles is somewhat similar to that of quinidine. These effects may have been caused by the concentration of calcium ions in extracellular space (Dar and Channa, 1997, 1999; Channa *et al.*, 2003). Furthermore, CDRI-08 (Keen Mind) stabilises the activity of mast cells equivalent to disodium chromoglycate (Samiulla *et al.* 2001).

### 7. Anti-Anxiety Symptoms <sup>[12]</sup>

CDRI-08 (Keen Mind) has anti-anxiety effects, anti-depressant activity, anti-convulsant action and anti-oxidant activity (Reas *et al.* 2008). Supplementation of Brahmi normalised levels of corticosterone hormones that were imbalanced due to acute and chronic induction of stress in rats. The amounts of 5-HT, noradrenaline (NA) and dopamine in the cortex and hippocampus regions of rats have also been normalized in acute and chronic unpredictable stress-induced animals. (Seikh *et al.*, 2007). Brahmi modulates the cholinergic mechanism and induces chelating effects on metal. Cognitive defects caused by neurotoxin, colchicine and ibotenic acid have been strengthened by dose-dependent administration of Brahmi in rats (Bhattacharya *et al.*, 2000; Rauf *et al.*, 2012b). Norepinephrine also decreased and 5-hydroxytryptamine levels improved with Brahmi therapy for hippocampus, cerebral cortex and hypothalamus. Anxiety was greatly relieved by higher doses of CDRI-08 (Keen Mind), equivalent to lorazepam, the standard medication used in the management of anxiety (Bhattacharya and Ghosal, 1998). However, treatment with a lower dose of CDRI-08 (Keen Mind; 10, 20 or 30 mg / kg complemented for 1 week period) did not affect serotonin (5-HT) and dopamine levels in the brain of mice (Rauf *et al.* 2012b).

### Other Properties

Brahmi also used as an Anti-Asthmatic Activity, Anti-cancer activity, Anticonvulsant Activity, Antidepressant, Anti-inflammatory, Anti-nociceptive activity, Antioxidant activity, Anti-stress Activity, Hepatoprotective activity, Anxiolytic effect, Anti-Spasmodic Activity.

### Conclusion

*Bacopa monnieri* has been used as a memory-enhancing, anti-inflammatory, analgesic, antipyretic, antipyretic,

sedative and anti-epileptic agent for decades. Preclinical and clinical trials have recently reported the cognitive enhancing results of various extracts of *Bacopa monnieri*. It has been described in Ayurveda texts as a Medhya Rasayan. It acts as a brain tonic. Usually all age group person can take it but it is commonly seen that in children it has been used mostly. Although there are numerous properties of Brahmi but it is mostly famous for its Medhya property.

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**Conflict of Interest:** Nil

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