



Memory enhancer

Memory is the ability of an individual to record sensory stimuli, events, information, etc., retain them over short or long periods of time and recall the same at a later date when needed.

Poor Memory, lower retention and slow recall and are common problems in today's stressful and competitive world. Age, stress, emotions are conditions that may lead to memory loss, amnesia, anxiety, high blood pressure, dementia, to more ominous threat like schizophrenia and Alzheimer's diseases.

The nature provides a new opportunity to regain one's full mental capacity. A number of herbs traditionally employed in the Indian System of Medicine "Ayurveda", have yielded positive results.

Acorus calamus

A semi-aquatic, medicinal herb *Acorus calamus* also called Sweet Flag is a valuable medicinal plant found almost through out India. It is traditionally employed in nervous disorders. The rhizomes of *Acorus calamus* are used in loss of memory given in combination with other drugs like *Centella asiatica*, *Bacopa moneira* and *Rauwolfia serpentina* as a memory booster.

Acorus calamus well known for its memory enhancing activity enhanced learning performance, of the descendents of drug-administered animals, and the animals themselves. *Acorus* when mixed with food and given to albino rats, showed excellent learning performance, enhancing activity proving its popular memory boosting activity.

Bacopa monnieri

Bacopa monnieri a well known memory booster is a Indian herb commonly given to infants where it is observed to boost memory power intelligence, and mental health. *Bacopa monnieri* is also called Brahmi, a name derived from Brahma, the creator god of the Hindu pantheon of deities. It is celebrated for its diversity of usage. It is said that the use of *Bacopa monnieri* for memory enhancement goes back 3000 years or more in India, when it was cited for its medicinal properties, especially the memory-enhancing capacity, in the Vedic texts "Athar-Ved Samhita" (3:1) of 800 B.C. and in Ayurveda.

The placebo-controlled, double blind study, tested the efficacy of *Bacopa monnieri* in children. For six weeks, 50 normal school children split into two groups were given *Bacopa monnieri* and placebo respectively. At the conclusion, they were evaluated for attention, concentration, and memory. *Bacopa monnieri* was shown to improve all these aspects significantly.

Preclinical studies have reported that the administration of extract (40mg/kg, p.o.) for three or more days is reported to improve the performance of rats in various learning situations.

Studies revealed that bacosides which are the major phytoconstituents in *Bacopa monnieri*, help to repair damaged neurons by enhancing proteins involved in the regeneration of neural-cell synapses. These are the relay stations of the brain that facilitate the transmission of nerve impulses. Thus *Bacopa monnieri* can be viewed as a neural nourisher, restoring depleted synaptic activity and leading to enhanced memory function.

Celastrus paniculata

Celastrus paniculata belonging to the genus of woody, climbing shrubs is distributed almost all over the India. In folk medicine the seeds are boiled and taken for blood purification. The seeds constitute the drug; they are bitter, and have an unpleasant odour and are traditionally used for sharpening the memory.

Recent preclinical studies of the seed extract on male rats showed an improvement in learning and memory in both the shuttle-box and step-through paradigms. The study also demonstrates that the cognitive-enhancing properties of extract of *Celastrus paniculatus* seed could be attributed to its antioxidant effect. Yet another study investigated the effects of the seed oil of *Celastrus paniculatus* on the 6 day performance of young adult rats in a navigational memory task-the Morris water maze. These studies confirm the memory boosting properties of *Acorus calamus*.

Centella asiatica

Centella asiatica, commonly known as Mandookaparni is a widely available Indian herb has been used for centuries in Indian systems of medicine. In India for the last 3,000 years of Ayurvedic medicine, it has been used for the purposes like boosting memory, wound healing, a mild diuretic, increasing concentration, alertness, as well as anti-anxiety and anti-stress. It has also been used for centuries in the treatment of liver and kidney problems.

In pharmacological and clinical trials *Centella asiatica* has been found to improve the power of concentration and general ability and behavior of mentally retarded children. The clinical trials demonstrated that the extract increases the intelligence quotient in mentally retarded children. In a clinical trial an Ayurvedic drug having *Centella asiatica* as one of the main ingredients reported marked improvement is seen in children with behavioral problems. It is found to improve short-term memory and learning performance due to its possible nootropic action involving cholinergic and GABAergic modulation.

Preclinical studies showed an impressive improvement in memory. The treated rats retained learned behavior 3 to 60 times better than the untreated rats. *Centella asiatica* causes an overall decrease in the turnover of central monoamines, implicating the involvement of Norepinephrine, Dopamine and 5-HT systems in learning and memory process.

Withania somnifera

Withania somnifera (Ashwagandha) has been used for thousands of years as a popular remedy for many conditions. Withania somnifera is one of the best known and most researched Ayurvedic herbs and holds a place in the Ayurvedic traditions similar to Ginseng in Chinese therapies. For that reason, Withania somnifera has been often referred to as the “Indian Ginseng”. Withania somnifera is used in several indigenous drug preparations for maintaining health as well as treatment of several disease conditions.

Withania somnifera extract (50, 100 and 200 mg/kg; orally) improved retention of a passive avoidance task in a step-down paradigm in mice. It also reversed the scopolamine-induced disruption of acquisition and retention and attenuated the amnesia produced by acute treatment with electro convulsive shock (ECS), immediately after training. Chronic treatment with ECS, for 6 successive days at 24 h intervals, disrupted memory consolidation on day 7. Daily administration of ashwagandha for 6 days significantly improved memory consolidation in mice receiving chronic ECS treatment. Withania somnifera (50 mg/kg) significantly reversed both ibotenic acid-induced cognitive deficit and the reduction in cholinergic markers after 2 weeks of treatment.

In another study conducted, it was observed that Withania somnifera extracts induced an increase in cortical muscarinic acetylcholine receptor capacity which might partly explain the cognition-enhancing and memory-improving effects of the extracts as observed in animals and humans.

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