



Pharmacological Effect of Brahmi Leaves

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Introduction

Ayurveda is an age-old science that examines the potential health benefits of naturally occurring plant products and how they might be used to cure a variety of ailments[1]. Three forces, or doshas, are said to impact the human body in Ayurveda: Pitta, Kapha, and Vata. An imbalance between these elements would result in the development of illnesses[2]. All of the body's reactions that throw off the regular physiological balance and put homeostasis in jeopardy are collectively referred to as stress. Stress is a widely acknowledged phenomenon that has been strengthened by the progress of industry and a demanding society. As a result, stressful events arise in everyone's daily life nowadays. Stress is the body's nonspecific response to any pressure placed upon it and is a reaction to stimuli that have the potential to upset its normal physiological equilibrium, or homeostasis. Many plants that were originally utilized as tonics because of their adaptogenic and rejuvenating qualities in traditional medicine have been studied since the development of adaptogens[3]. The hippocampal and middle temporal lobes, which regulate recent memory, are involved in the early impairment of recent memory[4]. Consequently, activation of additional brain regions may show up as evidence of extrapyramidal and pyramidal movement signs, sleep disorders, cognitive issues, and psychological alterations[5]. Pennell, *Bacopa monnieri* (Linn.). Brahmi, also known as *Syn. Herpestis monnieri* L. family Scrophulariaceae, is an annual or perennial herb that grows up to 1,320 meters in altitude in marshy parts of India. It has a succulent, rather glabrous texture. Herbs were used by the majority of traditional Indian healers and Ayurvedic practitioners to cure diabetes, dermatitis, and anemia. Additionally, it's used as a secure cardiac tonic. In Indian medicine, the entire plant is well known for being a nervine tonic and a cure for mania and epilepsy [6]. The numbers cited above point to a sharp increase in the prevalence of AD worldwide even while the number of available treatments stays stable. Since herbal medicines have a better biosafety profile than synthetic ones, they are becoming increasingly popular throughout the world, with over 80% of people using them. In this article, the literature on *Bacopa monnieri*, also known as Brahmi, a nootropic herb with antioxidant, cholinergic, and anti-beta amyloid properties, as well as a high safety profile, was thoroughly examined. Brahmi is a prospective treatment for AD[7].

PLANT DETAILS

Plant Name	Bacopa monnieri
Family	Plantaginaceae
Common Name	Brahmi, Indian pennywort, water hyssop, thyme-leafed gratiola, herb of grace.
Synonym	kapotvadka, somvalli and saraswati

Table -01 Plant Detail [8-9-10]



Figure-01 Brahmi [11]

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Ayurvedic Reference of Brahmi

ब्राह्मी हिमासरा तिक्त लघुमेध्या च शीतला ।
कषाया मधुरा स्वादुपाकाऽऽयुष्या रसायनी ।२८० ॥
स्वर्वा स्मृतिपदा कुष्ठपाण्डुमेहास्त्रकाराजित् ।
विषशोषज्वरहरी तद्भ्रमण्डुकपर्णिनी ।२८१ ॥

Shloka No- 280-281, Guduchyadi Varga, Bhavaprakasa Nighantu, Indian Materia Medica of SRI BHAVAMISHRA (C. 1600-1600A.D.)

ब्राह्मीक शीतवीर्य, सारक (दस्तावट), तिक्त, कषाय और मधुर रसयुक्त, लघु, मेधा के लिए हितकर, शीतल, विपाक में मधुर रस युक्त, आयु को बढ़ाने वाली, रसायन, स्वर को उत्तम करने वाली, स्मरण शक्ति को बढ़ाने वाली एवं कुष्ठ, पाण्डु, प्रमेह, रक्तविकार, खोंली, विष, शोथ तथा ज्वर को दूर करने वाली होती है। मण्डुकपर्णी-इसके भी समस्त गुण ब्राह्मी के समान ही हैं।

The above shloka explains the properties and actions of the herb Brahmi. Brahmi is cold in potency, has bitter and astringent taste, sweet to smell, and a very powerful herb. It's an extremely beneficial herb that improves and enhances memory, intelligence, and skin tone. It also helps in curing leprosy, anemia, blood disorders, fever, and inflammation.

Ayurvedic properties of Brahmi

- Guna (qualities) – Laghu (light to digest)
- Rasa (Taste) – Tikta (bitter), Kashyam (Astringent) and Madhura (Sweet)
- Vipaka (taste conversion after digestion) – Madhura (sweet)
- Veerya (potency) - Sheeta (Cold)
- Effect on Tridosha – Vata-Pitta Samaka - It alleviates Vata and Pitta doshas.

Brahmi also known as Sarasvati is a therapeutic herb that helps in enhancing memory, regulates blood sugar levels, and contains many antioxidants that are essential in leading a healthy life, amongst its many uses. It's often called a brain booster for its benefitting effect on the brain and memory. Apart from these health benefits, it is also known for nourishing hair and promoting hair growth. In all, brahmi is a super and celebrated herb in Ayurveda and is acknowledged worldwide for its numerous benefits.

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Figure-02 Brahmi [12]

Macroscopic

The plant is succulent when young but shrivels when it dries; it has a flavor that is slightly bitter, has no distinct smell, and is made up of tangled, crumpled fragments of broken roots, branching stems, leaves, flowers, and delicate fruits.[13]

Root

The plant bacopa (*Bacopa monnieri*) has been utilized in traditional Ayurvedic therapy for ages. It is known as Brahmi at times. Bacopa may elevate brain chemicals related to memory, learning, and thought processes. Additionally, it may shield brain tissue against toxins linked to Alzheimer's disease.[14]

Stem

The stem consists of cylindrical, glabrous pieces with conspicuous nodes. The internodes are around 1-1.5 cm in length and 3-4 mm in diameter, pale yellowish green with a purplish tinge, and are ventrally linked to a cluster of tortuous, brittle roots.[15]

Leave

0.6-2.5 cm in length and 3-8 mm in width, simple, opposite and decussate, somewhat sessile, glabrous, obovateoblong to spatulate in shape, whole, lower surface speckled with minute specks, obscurely 1-3 nerved, color mild green[16].

Description of the Plant

The names of these two herbs can vary between teachers and geographic regions. *Centella asiatica* is commonly referred to as brahmi in northern India, while the name is more frequently used to describe *Bacopa monnieri* in southern India. A small, water-loving perennial creeper of the Apiaceae family, brahmi is thought to have originated in the Indian subcontinent, although it can be found in warm climates across the globe. Its slender stems support vibrant green leaves that are arguably this plant's most distinctive feature. Many of its names are a reference to the appearance of its leaves. For instance, in ancient Sri Lanka, the gentle curling shape of the leaves was thought to resemble a cone, leading to the Sinhalese name —gotu kola or —cone leaf. One of its Sanskrit names is mandukaparni, or —frog-leaved, referencing the shape of its leaves resembling the webbed feet of a frog. Another of its Sanskrit names, manduki (—like a frog) alludes not to the frog-like appearance of the leaves, but to the plant's tendency to grow near bodies of water.

Brahmi and Science

Over the last few decades, Brahmi has been researched extensively for its chemical constitution and identification of its therapeutic role. Compounds responsible for the pharmacologic effects of Brahmi include alkaloids, saponins, and sterols. Detailed investigation first reported the isolation of the alkaloid 'brahmine' from Brahmi. Later, numerous compounds have been isolated including nicotine, herpestine, betulinic acid, stigmaterol, beta-sitosterol, as well as numerous bacosides and bacopa-saponins. Extensive investigation on the plant extract and isolated bacosides, especially bacosides A and B, confirm their nootropic (Medhya Rasayana) action. Brahmi enhances the three basic components of mind: power of learning (Dhi), power of retention (Dhrati) and power of recall (Smriti).

DISCUSSION

Brahmi is a rare Ayurvedic plant that, when properly hydrated, can be cultivated virtually any place and is commonly available. It has been used in different forms for centuries, and its benefits are backed up by a large body of literature and experience. Surprisingly, the entire plant may be utilised as a medicine. Ayurveda is the science of life in its entirety. Brahmi aids in the core purpose of Ayurveda, which is to maintain appropriate balance between the body, mind, and soul in order to prevent and heal ailments and increase longevity. Its therapeutic spectrum is broad, and it may be used to prevent as well as treat a wide range of ailments. It's a sattvic plant derived from the same root as Brahman, who has the Sat-ChitAnanda nature. Its sattvic nature can aid in the development of robust ojas, as well as the reduction of undesirable behaviours and the treatment of addictions. It balances all doshas, dhatus, and has an influence on practically all Srotas in the human system, as well as animals, according to research. It is effective in many neurologic and psychiatric problems since it is a nervine agent. This uncommon plant possesses tonic, sedative, and stimulating nervine actions all at the same time. It can aid with severe skin diseases as a purifier. It increases nutritional condition, memory, intelligence, and lifespan by strengthening the immune system.

CONCLUSION

Centella asiatica has justified its use as a universal drug to treat a wide variety of health problems since time immemorial. Innumerable experimental and clinical investigations have demonstrated its significant role in enhancing memory and uplifting cognition, promoting brain repair, anti-epileptic, anti-anxiety, wound healing, anti-stress activities. Clinical trials have proven its effectiveness in supporting treatment for autism and mental retardation. It is most commonly used as a nervine tonic that enhances learning and academic performance, improves mental alertness, sharpens short-term and long-term memory, rectifies speech disorders, increase concentration and intellectual ability in children.

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