



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

**THE CONCEPT OF *MEDHYA RASAYANA* IN *CHARAKA SAMHITA* W.S.R.TO
DEMENTIA**

NAGA KUMAR BM

Assistant Professor, Department of Rachana Sharir, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi (U.P.)

*Corresponding Author: Dr. Balla Mohana Naga Kumar: E Mail: drbmnbhu123@gmail.com

Received 16th June 2020; Revised 19th July 2020; Accepted 24th Aug. 2020; Available online 1st May 2021

<https://doi.org/10.31032/IJBPAS/2021/10.5.5477>

ABSTRACT

Dementia is a generalized decline of intellect, memory, and personality, without impairment of consciousness, leading to functional impairment. Dementia currently affects about 50 million people worldwide, with the numbers set to increase dramatically as life expectancy increases further. It is four times more common in men than in women. 5.2% of people over the age of 60 is living with dementia. The drugs using for dementia are often inadequate and have many side effects. So in recent years, dementia patients are renewed interest in herbal natural medicines for the treatment of dementia. The description regarding the concept of *Medhya rasayana* is one of the powerful solutions for many of the psychosomatic problems. In *Charaka samhita* there is a detailed narration of *rasayana*, its method, and classification. *Charaka* has mentioned four drugs *Mandookaparni*, *Yashtimadhu*, *Guduchi*, and *Shankhapushpi* as *Medhya Rasayanas*. Many research works are going on to find out the nature of *Medhya rasayanas*. In the field of nootropic drugs, *Medhya rasayanas* are finding its applicability which is yet to be explored further.

Keywords- *Medhya*, *Guduchi*, *Charaka*, memory, nootropic

INTRODUCTION

The global effort today is not to heal but to protect and promote healthy living. *Ayurveda* has its principle which can prove a great

solution for many of the problems concerned with mind and body [1]. The description regarding the concept of *Medhya rasayana* is

one such concept that requires reconsideration and application in the present scenario as it can be a powerful solution for many of the psychosomatic problems like dementia.

I. Dementia disease

Dementia is a generalized decline of intellect, memory, and personality, without impairment of consciousness, leading to functional impairment. It is a clinical syndrome, rather than a diagnosis in itself, which may be caused by a variety of pathologies. Dementia is an acquired disorder, as distinct from learning disability in which impairments are present from birth, although the onset may be at any age [2]. Dementia currently affects about 50 million people worldwide, with the numbers set to increase dramatically as life expectancy increases further. It is four times more common in men than in women. 5.2% of people over the age of 60 is living with dementia [3].

Causes of dementia -Dementia has many causes, among older patients; the majority of cases are caused by Alzheimer's disease (55 percent), vascular dementia (20 percent), and Lewy body dementia (15 percent). Although these and many other causes are irreversible (Table 1). **Clinical features-** Dementia usually presents with impairment of memory.

Although the onset is typically insidious, it may come to notice after an acute deterioration. This may be triggered by a change in social circumstances or an intercurrent illness. There may also be uncharacteristic aggressive behavior or sexual disinhibition [5] (Table 2).

II. Medhya rasayana in Charaka samhita

Rasayana means rejuvenation and anti-aging therapies in *Ayurveda*. It also includes all measures for geriatric healthcare and immunity enhancement. *Rasayana* essentially denotes medicinal nutrition, rejuvenation, longevity, immune-enhancing, and geriatric health care. The *rasayana* is not necessarily drugs. They may be in the form of a *rasayana* food, or a positive healthy lifestyle with a *rasayana* effect or a *rasayana* drug or all the three together. The *rasayana* remedies promote good qualities of the cells and tissues of the body through improved nutrient effect, boosting digestion, metabolism, and/or augmenting the microcirculation and tissue perfusion [7]. The ancient medical system has mentioned many traditional occurring herbal preparations under the category '*Medhya*'. The *rasayana* drugs naturally increasing the memory are called '*Medhya rasayanas*'. These are the specialized *rasayana* drugs, which are an influence on higher brain

functions [8]. In *Charaka samhita* there is no direct mentioning of *Medhya rasayana* as an independent type. But there is mentioning of four drugs Viz. *Mandookaparni*, *Yashtimadhu*, *Guduchi* and *Shankhapushpi* as

Medhya rasayanas. *Medhya rasayana* is a type of *Kamyarasayana* which is described as to fulfill a special purpose i.e. enhancing the memory and intellect [9] (Table 3).

Table 1: Causes of dementia [4]

Primary degenerative conditions	Alzheimer's disease, Lewy body dementia, Frontotemporal dementia (Pick's disease), Wilson's disease, Multiple sclerosis, motor neuron disease, traumatic head injury, Huntingdon's disease
Neurological	Normal-pressure hydrocephalus, intracranial tumor, subdural hematoma
Vitamin deficiencies	Vitamin B12, folic acid, and thiamine
Endocrine	Hypothyroidism, Cushing's
Infections	HIV, encephalitis, CJD (Creutzfeldt – Jakob disease).
Vascular	multi-infarct dementia
Toxins	alcohol
Anoxia	cardiac arrest, carbon monoxide poisoning
Metabolic	hepatic encephalopathy, diabetes mellitus

Table 2: Clinical features of dementia [6]

Character	Symptom
Cognition	Poor memory, impaired attention, aphasia, agnosia, and apraxia. disorientation, 'personality change'
Behaviour	Odd and disorganized, restless, wandering, self-neglect, disinhibition, social withdrawal
Mood	anxiety, depression
Thinking	slow, impoverished, delusions
Perception	illusions, hallucinations
Insight	impaired

Table 3: *Medhya rasayana* plants in *Charaka samhita*

Name of the plant	Latin name [10]	family	Part used for <i>Medhya rasayana</i> effect
<i>Mandukaparni</i>	<i>Centella asiatica</i>	Apiaceae	juice
<i>Yashtimadhu</i>	<i>Glycyrrhiza glabra</i>	Fabaceae	powder of with milk
<i>Guduchi</i>	<i>Tinospora cardifolia</i>	Menispermaceae	juice of along with its roots and flowers
<i>Shankhapushpi</i>	<i>Convolvulus pluricaulis</i>	Convolvulaceae	paste

III. Nootropics

Medhya rasayana drugs are considered as nootropics in modern pharmacology. Nootropics are drugs, supplements, nutraceuticals, and functional foods that are purported to improve mental functions such as cognition, memory, intelligence,

motivation, attention, and concentration. Hence these are also referred to as smart drugs, memory enhancers, and cognitive enhancers. Nootropics are improving the brain's oxygen supply and stimulating nerve growth [11]. At present, there are several drugs in the market that improve memory,

concentration, planning, and reduce impulsive behavior. The most commonly used class of drugs is stimulants. Racetams, dopaminergics, cholinergics, GABA blockers, glutamate activators, cAMP, Serotonergics are the other drugs used for different problems related to cognition. Apart from this the drugs like anti-depressors, adaptogenic (antistress), and mood stabilizers are also found to be useful. Blood flow and metabolic function nerve growth stimulation and brain cell protection, dietary factors are also taken into consideration [12].

DISCUSSION

Dementia is not a particular disease. It is a term that described a group of symptoms associated with a decline in memory or other brain-related skills severe enough to reduce a person's ability to perform everyday activities. The drugs using for dementia are often inadequate and have many side effects. So in recent years, dementia patients are renewed interest in herbal natural medicines for the treatment of dementia. For this problem, the solution is finding out in *Charaka samhita*. *Charaka* has described four *Medhya rasayana* plants for enhancing memory [13].

Mandukaparni

Mandukaparni is one of the foremost vital herb in *Ayurvedic* pharmaceutical framework

for a healthy brain. Too known as *Gotukola* and Asiatic pennywort, the extracts of this herb are valuable in nerve recovery, it may be a therapeutic plant found in marshy places all through India up to 600 meters. Its leaves resemble the webbed feet of the frog. The edge of the leaves is toothed, long thick stems and blossoms are whitish-pinkish. It bears little fruits. In damp places all through India up to 200m. It is commonly utilized for improving memory and other cognitive capacities. It moreover acts on the skin, gastric mucosa, lymphatic framework, heart, vocal cord, and lungs. For the medicinal purpose, the leaves out of the plant are utilized. Tea made for *gotukola* plant can be exceptionally accommodating for unwinding the intellect, soothing the pressure, and relieving uneasiness [14].

The essential dynamic compound of *Gotukola* are saponins moreover called triterpenoids which incorporate asiaticosides, and the other chemical constituents are brahmosides and brahminosides which is dependable for CNS and uterorelaxant activity [15]. Other chemical constituents are phenolic compounds (flavonoids, phenylpropanoids, tannins), polyacetylenes group, alkaloids, carbohydrates, vitamin, mineral, and amino acid. *Gotukola* moves forward mental clarity by lessening mental

disarray and stress, expanding concentration, and revitalizing the neurons (brain cells). It moreover progresses the blood supply to the brain, which moreover oxygenates the brain and progresses mental clarity. *Gotukola* makes a difference to anticipate dementia and moves forward cognition. It has antioxidant activity, which makes a difference to reduce oxidative harm within the brain and weakens memory impedance [16].

Yastimadhu

It is a tall perennial undershrub about 1m in height. Leaves are compound; leaflet 4-7 pairs; flowers violet in racemes; pods oblong to linear flattened, seeds reniform. The part used is the dried underground stems and roots. Its outer surface is pale chocolate brown in colour, flexible and fibrous and internally has a light yellow colour. It has a characteristic pleasant sweet taste [17].

The chemical constituents-The root contains the dynamic standards, glycyrrhizin, glycoside, isoliquiritin, liquiritin, steroid estrogen, hispaglabridin B, isoliquiritigenin, and paratocarpin B [18].

Yashtimadhu is having anxiolytic, immunomodulatory, antioxidant, antistress, and adaptogenic properties. Anti-inflammatory and antioxidant properties are contributing favorably to the memory

enhancement effect. Different experimental studies are carried out on albino rats showed facilitation of cholinergic transmission in the mouse brain. By increasing the duration of reverberation of neuronal circuits and helps in improving memory. It has the noteworthy antioxidant action due to glabridin and hispalglabridins A and B of G. The antioxidants secure vulnerable brain cells from the oxidative stress, coming about in decreased brain harm and improved neuronal work, in this manner upgrading the memory. The previous studies show that ethanol extract of *G. glabra* Linn. has a cerebroprotective impact in hypoxic rats, which may prevent the dementia [19, 20].

Guduchi

This herbal drug is one of the highly valuable and most common drugs in *Ayurveda* which incorporates it is a potent classical drug; it is employed as an important ingredient in several formulations under the pharmaceuticals and herbal drug industry, being an efficient herbal drug, with abundant and easy availability and recognition during source plants collection for the genuine raw drug with good demand. The drug possessing restorative and alterative properties is a significant rejuvenation (*rasayana*) drug which is recommended in certain diseases

under the group, as a preventive as well as curative herbal remedy [21].

Chemical constituents- m tinosporone, tinosporic corrosive, cordifolisides A-E, syringen, berberine, giloin, gilenin, unrefined giloininand, arabinogalactan polysaccharide, picrotene, gilosterol, tinosporol, tinosporidine, sitosterol, cordifol, and glucan polysaccharide [22].

The root extract of *Guduchi* was found to have normalizing activity against stress-induced changes in norepinephrine, dopamine, 5-hydroxytryptamine, and 5-hydroxyindoleacetic acid levels. *Guduchi* upgrades cognition (learning and memory) in ordinary rats. *Guduchi* is appeared to have antioxidant action and amelioration. This makes a difference in wellbeing promotion as well as preventing forthcoming diseases [23].

Shankhpushpi

Sankhapushpi is the foremost viable among the four *Medhya rasayana* drugs. Throughout India A prostrate or suberect, spreading hairy perennial herb; diffuse hairy herbs with rufous –fulvous tomentose branches. *Shankhpushpi* is a very common plant that is found in India. The whole plant of *Sankhpushpi* is used in various formulae as a nervine tonic for the improvement of

memory and other cognitive function. *Shankhpushpi* is recommended for nervous system disorder, such as stress, mental fatigue, anxiety, and insomnia. It has been suggested that *Shankhpushpi* has a calming effect by regulating the body production of the stress hormones, cortisol, and adrenaline [24].

The major bioactive components of sankhpushpi are – coumarins, glycosides, flavonoids, anthocyanins, alkaloid, octacosanol, hydroxycinnamic acid, glucose, and sitosterol glycosides [25]. These chemical constituents are taking a role in nootropic and memory-enhancing properties, along with its other pharmacological activities. Ethanolic extract of *Sankhpushpi* enhances memory by increasing neurite outgrowth. These compounds offer assistance in brain incitement and increment the ability to concentrate. It diminishes uneasiness and stress by controlling the generation of the body's stretch hormones, adrenaline, and cortisol. It is detailed to have anxiolytic and memory-enhancing and mood-elevating impacts and is claimed to impede brain aging [26].

Table 4: Anti-dementia effects of *Medhya rasayana* plants

<i>Medhya rasayana</i> plants	Active compounds	Significant Anti-dementia effects
<i>Mandukaparni</i>	Asiaticoside, brahmosides, brahminosides, alkaloids, phenolic compounds (flavonoids, tannins phenylpropanoids,), vitamin, mineral, polyacetylenes group, carbohydrates, amino acid.	Enhances memory, prevents cognitive impairments, protect against oxidative stress, reduce the mitochondrial damage, neurogenic, neuroprotective increasing synaptogenesis, regeneration of hippocampal cell
<i>Yastimadhu</i>	glycyrrhizin, liquiritin, glycoside, isoliquiritin, hispaglabridin-B, soliquiritigenin, paratocarpin B.	increases the blood circulation to the CNS, Anxiolytic, immunomodulatory, antioxidant, antistress and adaptogenic
<i>Guduchi</i>	m-tinosporone, tinosporic acid, cordifolisides A-E, syringen, berberine, giloin, gilenin, gilosterol, cordifol, tinosporol, tinosporidine, sitosterol, glucan polysaccharide.	Nutritive, enhances cognition, anti-inflammatory, and amelioration, normalizing activity against stress-induced changes in norepinephrine, dopamine, 5-hydroxytryptamine, and 5-hydroxyindoleacetic acid levels
<i>Shankapushpi</i>	Glycosides, alkaloids Flavonoids, coumarins, anthocyanins	Ameliorates memory and cognition, antioxidant effects, neutralizes tau induced neurotoxicity, increases acetylcholine content, neurite outgrowth, dendritic development

CONCLUSION

The drugs using for dementia are often inadequate and have many side effects. So in recent years, dementia patients are renewed interest in herbal natural medicines for the treatment of dementia. In this primary drugs are *Medhya rasayanas*. The *Medhya rasayana* medicinal plants i.e. *Mandukaparni*, *Yastimadhu*, *Shankpushpi*, and *Guduchi* not only reduce brain aging and induce antistress and memory-enhancing effects which help in the regeneration of neural tissues, but also induce antioxidant, anti-inflammatory, anti - amyloidogenic, nutritional and immune-supportive effects in the human body. So these *Medhya rasayana* plants explained by *Charaka* are very safe to

use in the treatment of dementia and reduce side effects.

Acknowledgment

The author acknowledges the immense help received from the scholars whose articles are cited and included in references to this manuscript. The author is also grateful to authors/editors/publishers of all those articles, journals, and books from where the literature for this article has been reviewed and discussed.

REFERENCES

- [1] Gupta. L.P., Essentials of Ayurveda, Chowkhambha Sanskrita pratishthan, Reprint edition, Delhi, 2001, p-12.
- [2] Martin L. Albert, Bracha Mildworf, The concept of Dementia, Journal of

- Neurolinguistics, 1989, 4(3): 301-308.
- [3] <https://www.who.int/news-room/fact-sheets/detail/dementia>
- [4] Pathak KP, An Overview of Dementia, MedDocs Publications, 2018, p-10.
- [5] John Geddes, Jonathan Price, Rebecca McKnight, Psychiatry, 4th edition, Oxford University Press Inc., New York, 2005, p-260.
- [6] Sunil Swami, Dementia: Advances And Treatment, e-book, Volume-1, 2017, p-113.
- [7] H.S.Puri, Rasayana-Ayurvedic herbs for longevity and rejuvenation, Volume-2, Taylor and Francis group, Newyork, 2003, p-10.
- [8] Reena Kulkarni, K. J. Girish, Abhimanyu Kumar, Nootropic herbs (*Medhya Rasayana*) in Ayurveda: An update, Pharmacognosy Reviews, 2012; 6(12): 147–153.
- [9] Agnivesha, Charak Samhita, chikitsasthana, Sharma PV. English translation, Chowkhamba orientalia, Volume- I, Revised edition, Varanasi, 2007, p-15.
- [10] Tirtha Sadashiva, The Ayurveda Encyclopedia, Ayurveda Holistic Center Press, 5th edition, 2005, p: 116, 117, 100, 89.
- [11] Colucci L, et.al, Effectiveness of nootropic drugs with cholinergic activity in treatment of cognitive deficit: a review, Journal of Experimental Pharmacology, 2012 Dec 11; 4: 163-72.
- [12] Mondadori C., In search of the mechanism of action of the nootropics: new insights and potential clinical implications, life sciences, 1994;55(25-26):2171-8.
- [13] Akhlaq A. Farooqui, et.al, Ayurvedic Medicine for the Treatment of Dementia: Mechanistic Aspects, 2018, Article ID 2481076, p-61-74.
- [14] PV Sharma, Dravyaguna vijananam Vol. IV, Chaukhamba Bharti Academy, Reprint, 2003; p-111.
- [15] Kumar Navven, *et al.* Comprehensive literature of Mandukparni, International Journal Of Ayurveda and Pharma Research, 2017; 5(5).
- [16] Khare C., Indian Medicinal Plants. Springer, New York, 2007, p-184.
- [17] Bhagwan Dash, Lalitesh Kashyap, Materia medica ayurveda, Concept publishing company, New Delhi, 1980, p-115.

- [18] Saxena S. Glycyrrhiza Glabra – Medicine over the millennium. Natural product radiance, 2005; 4(5): p. 358-67.
- [19] Muralidharan P, Balamurugan G, Venu Babu, Cerebroprotective effect of *Glycyrrhiza glabra* Linn. root extract on Hypoxic rats, Bangladesh J Pharmacol. 2009; 4:60–4.
- [20] Dhingra D, Parle M, Kulkarni SK. Memory enhancing activity of Glycyrrhiza Glabra in mice. J Ethnopharmacol, 2004; 91:361–5.
- [21] Sharma PC, Yelne MB, Dennis TJ, Database on Medicinal plants used in Ayurveda and Siddha, Volume-3. New Delhi: CCRAS, Dept. of AYUSH, Ministry of Health and Family Welfare, Govt. of India; 2005. p- 256–81.
- [22] Singh SS, et.al, Chemistry and Medicinal properties of *Tinospora cordifolia* (*Guduchi*), Indian J Pharmacol, 2003; 35:83–91.
- [23] Pradeep K *et al*, *Tinospora cordifolia* (Giloy): Phytochemistry, Ethnopharmacology, Clinical Application and Conservation Strategies, Curr Pharm Biotechnol, 2020, P-77-82.
- [24] Yoganarasimhan SN, Medicinal Plants of India, Volume- 1. Bangalore: Interline Publishing Pvt; 1996, p- 130.
- [25] Sethiya NK, Mishra SH, Review on ethnomedicinal uses and phytopharmacology of memory boosting herb *Convolvulus pluricaulis* Choisy. Australian J Med Herbalism. 2010; 22:1.
- [26] Nahata A, Patil UK, Dixit VK, Effect of *Convolvulus pluricaulis* on learning behavior and memory enhancement activity in rodents. Nat Prod Res, 2008; 22: 1472–82.