

# A Review on Medhya Rasayanas: A Brain Bracer

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## ABSTRACT

**Objective:** Ayurveda is a Sanskrit word that literally means “the scripture for longevity”. It epitomizes an ancient system of traditional medicine founded in India which is 5000 years old. The review aims to explore the various drugs related to Medhya Rasayana and their effectiveness in the present era. **Major Findings:** The concept of Rasayana in Ayurveda is considered very helpful to fight diseases of modern medicine i.e., regeneration of tissues after the disease condition like osteoarthritis, age related macular degeneration (AMD), Alzheimer’s and Parkinson’s disease, injuries, trauma, heart attack, stroke, etc. Neurological and psychiatric disorders are generally correlated generally with loss of memory, cognitive deficits, impaired mental function, etc. The “Madhya Rasayanas” is useful in enriching the intellectual e.g., mandukparni swaras, yastimadhu churna with ksheer, guduchi swaras, and Shankhapushpi kalka. These drugs are helpful in the prevention and curing mental disorders of all age groups. They encourage the Intellect (Dhi) Retention power (Dhriti) and memory (Smriti). Mood disorders are related to a huge obligation of disease, suicides, physical comorbidities, high economic costs, and poor quality of life. Henceforth,

it’s a huge public health problem in the current scenario. Although modern medicine which is based on psychoactive drugs is successful in curing different neurological and psychiatric disorders but it is unfortunately very limited. **Recommendations:** The oldest said medicine system on the planet i.e. Ayurveda is practicing highly effective drugs having neurotoxic effects. Owing to the effectiveness of these drugs it could be beneficial to combat the present therapy used in neurological deficit with the Medhya Rasayana for better results.

**Key words:** Rasayana , Ayurveda, Cognition ,Nootropic, Medhya Rasayana.

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## INTRODUCTION

### An Undefeatable Approach of Disease Prevention: Ayurvedic

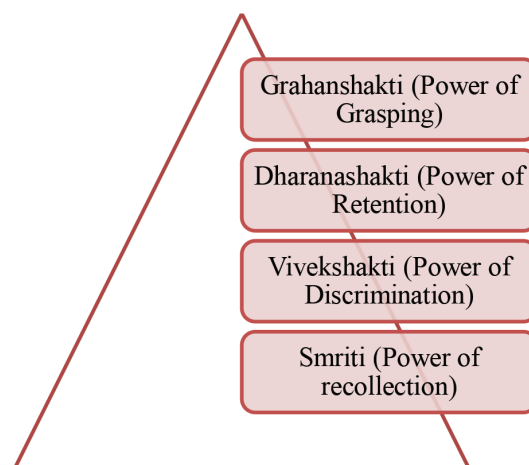
“जरा व्याधि नाशनम् औषधम् रसायनम्”<sup>1</sup>

As said in Ayurveda the rasyanas are the mixtures the cure and treat diseases. Ayurveda is said to be the Upaveda of Atharva Veda, which is considered the oldest recorded prudence on earth. Rasayana is believed as a form of revitalized recipes, dietary regimen, and a special health promoting conduct and behavior i.e., Achara-Rasayana Arvid.<sup>2</sup> This remedy is useful for the person to attain longevity, memory, intelligence, freedom from disorder, youthful age, excellence of luster, complexion and voice, optimum strength of physique and sense organs, successful words, respectability, and brilliance. It is said that Ayurveda treats human diseases by setting up equilibrium in the different elements of human life, the body, the mind, the intellect, and the soul. The Doshas maintains the balance and homeostasis of the body of a person which then control all the metabolic processes-(a) Vata- which regulates the catabolic activity (tissue wear and tear) (b) Kapha-which accelerates the synthesis of new tissues (c) Pitta- which manages the process of nutrients assimilation into the tissues.<sup>3</sup> The revitalization and rejuvenation method in Ayurveda is known as the “Rasayan chikitsa” (rejuvenation therapy), which is one of the specialized branches of Ayurveda out of eight. The main target is improvement in strength, immunity, ojus, vitality, willpower and determination of the body, longevity, memory, intelligence, excellence of luster, complexion and voice, optimum strength of physique, and sense organs. Ayurveda has described various kinds of mental Disorders: 1. Unmada (Insanity) 2. Apasmara (Epilepsy) 3. Atattva abhinivesha (Obsessive Disorders) 4. Bhaya (Fear) 5. Harsha (Excitation) 6. Shoka (Grief) 7. Udvega (Anxiety) 8. Avasada (Depression). On the basis of the effects of drugs on the body and how to maintain proper health, acharya Charaka distributed all the drugs into three groups 5:

1. Doshaprasamana- pacifies the vitiated doshas
2. Dhatu Pradushana-vitiates Dhatus
3. Svastha vrittakara-maintains the proper health.<sup>4</sup>

In Ayurveda Rasayana agents encourage nutrition through the following modes:

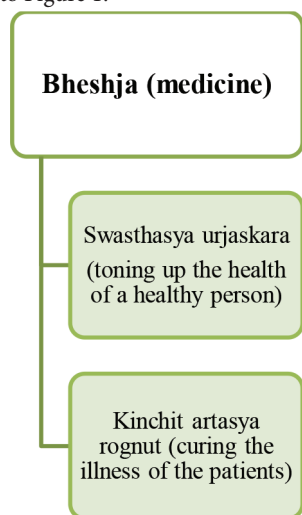
1. By Direct augmentation of the nutritional quality of Rasa (nutritional plasma)- Satavari, milk, and Ghee.
2. By stimulating nutrition through improving Agni (digestion and metabolism) as Bhallataka, Pippali.
3. Indorsing the capability of Srotas (microcirculatory channels in the body) as Guggulu etc



**Figure 1:** Sub Division of Medhya (mental faculties).

## The Rasayana Therapy

The right balance of Agni of Dhatu, Vayu, and Srotas are important factors for maintaining normal strength, color, and longevity of the body according to Acharya Charak. Medhya comprises all the three mental faculties- Dhee, Dhriti, and Smriti and these are interconnected.<sup>5</sup> It is further subdivided into Figure 1:



**Figure 2:** Division of Medicine (Bheshja) in Rasayan Therapy.

The target of Rasayana Chikitsa (treatment) is mainly to nurture blood, lymph, flesh, adipose tissue, and semen which averts the individual from chronic degenerative diseases.<sup>6</sup> The therapy affects the fundamental aspect of the body such as Dhatus, Agni, Srotansi, and Ojus. In Rasayana therapy, the Bheshja (medicine) is divided into two types Figure 2:

## Drugs in Rasayana

According to Acharya Charak, Rasayana is the way of attaining the best quality of rasadi dhatus (body tissues) where it enhances life span, medhya (intelligence), treats illness, stabilizes youthfulness, improves luster, complexion, voice, and makes body and senses strong and healthy, etc. Table 1<sup>7</sup> Rasayana drugs act by following-

## Types of Rasayana

Mainly Rasayana is of three types<sup>8</sup>

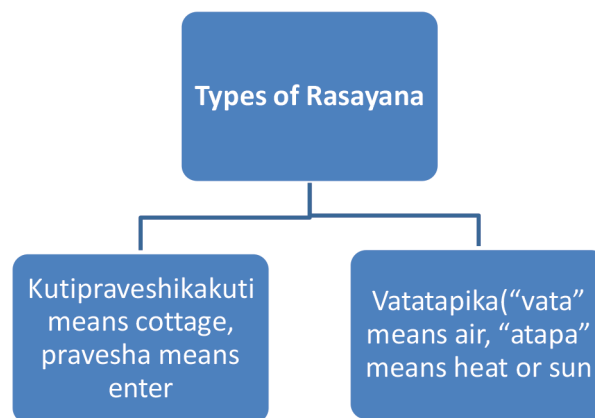
1. Naimittika Rasayana (nimitt-in Sanskrit means “cause”) is called a Rogapaharan or Curative type of Rasayan. It balances particular causes which are responsible for the disease in the body. For examples Dhatri rasayana, Mandookaparni rasayana, Brahmi rasayana, and Triphala rasayana.
2. Ajasrika Rasayana-to maintain good health and improve the quality of life through a healthy lifestyle, diet, or exercise. It is also called Vayasthapan Rasayan.
3. Kamyra Rasayana-defined to fulfill a wish or desire or to serve a special

**Table 1:** Drug in Rasayana.

| Action          | Drugs   |
|-----------------|---|
| Immunomodulator | Guduchi   |
| Adaptogen       | Ashwagandha, Tulsi, haridra, Pippali, Amalaki, Guduchi, shatavari |
| Antioxidant     | Tulsi   |
| Nootropic       | Mandookparni, Guduchi, Yashtimadhu and Shankhpushpi               |

purpose (kama -desire). It is of four types:

- a. Prana Kamyra- best quality of prana (life energy) in the body.



**Figure 3:** Types of Rasayan.

- b. Medhya Kamyra- enhancing memory and intellect. e.g., Shankhpushpi Rasayan.
- c. Ayush Kamyra- increasing longevity.
- d. Chakshu Kamyra- maintaining healthy eyes.

Based on mode of Administration. It is divided into two:

Kuti praveshika (kuti means cottage, pravesha means enter)- It is indoor management where the person lives in a specially prepared cottage for a long period while taking various Rasayana herbs Figure 3.

Vata tapika- (“vata” means air, “atapa” means heat or sun) is outdoor

### 1. Achar Rasayan (i.e. Behavioural modalities)

Defines form of rasayana for psychological and spiritual health. It emphasize mainly on the body, mind, and soul.

### 2. Ahar Rasayan (Dietary modalities)

Consist of eating rules, following a sattvik diet and life style, speaking the truth, practicing non-violence, living in harmony with the nature, following social ethics and conducts.

### 3. Dravya (Aushadha) Rasayan

Consist of some herb and food types helpful for the idealperformance of the body as well as the brain.

**Figure 4:** Sub classification of Vata tapika.

management involves having Rasayana, while a person remains exposed to air and heat. Includes the following Chyavanaprasha, Brahma Rasayana, Shilajitu Rasayana, Amalaki Rasayana, Haritaki Rasayana, Pippali Rasayana, Lohadi Rasayana, and Loha shilajit Rasayana. Based on modalities it is of three types Figure 4:

## What is Medhya Rasayan?

The word “medhya rasayan” is a Sanskrit word “medhya” means intellect and “Rasayana”, means rejuvenation. The medhya rasayan helps to improve the intellectual e.g., mandukparni swaras (mandukparni extract), yashtimadhu churna with ksheer, guduchi swaras (guduchi extract), and shankhpushpikalka. Medhya Rasayana is a group of 4 medicinal plants

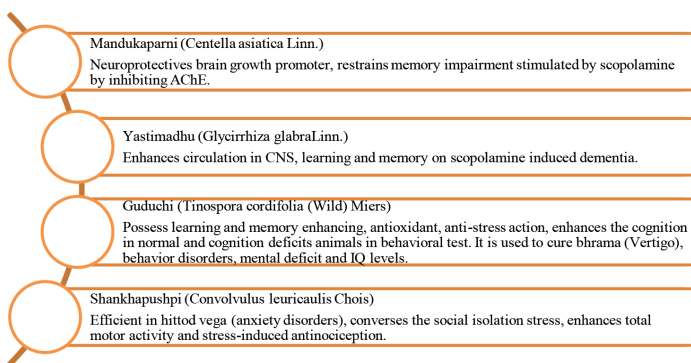


Figure 5: Medicinal plants in Medhya Rasayana.

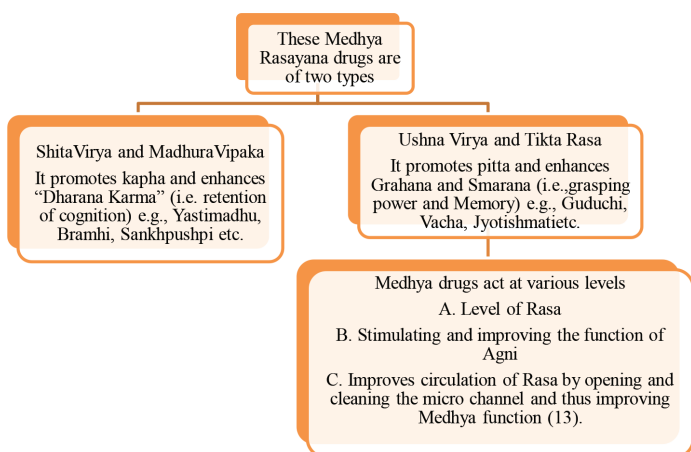


Figure 6: Types of Medhya Rasayana drugs.<sup>9</sup>

that can be used alone or in combined form Figure 4.

These Medhya Rasayana drugs are of two types:

### Neuroprotective effect Medhya Rasayana

Medhya Rasayana drugs play a very crucial role in curing psychiatric and psychosomatic diseases. The treatment involves the person achieving sedation, calmness, tranquility, or stimulation of activities of the brain. Medhya Rasayana drugs help cure mental disorders of all age groups Figure 6. They enhance Intellect (Dhi) Retention power (Dhriti), memory (Smriti), and have a Neuronutrient effect by improving cerebral metabolism. MedhyaRasayana drugs are known to have a specific effect on mental performance by promoting the functions of "Buddhi" and "Manas" by correcting the disturbances of "Rajas" and "Tamas". This relieves the mental patient from stress, anxiety, and depression. Earlier reports indicated 'Rasayan drugs' could be used in stem cell therapy.<sup>10</sup> This may be beneficial to overcome challenging diseases to modern medicine i.e., regeneration of tissues after the disease condition like osteoarthritis, age-related macular degeneration (AMD), Alzheimer's and Parkinson's disease, injuries, trauma, heart attack, stroke, etc. Rasayana concept of Ayurveda is related to tissue regeneration and cell renewal and specific Rasayana is said to promote and nourish respective dhatus or tissues.<sup>11</sup> For example, Medhya Rasayana for the brain, Hridya Rasayana for the heart, Twacha Rasayana for the skin, and Chakshusya Rasayana for the eyes. Ayurveda describes the list of herbs for Nootropic activity that have multi-dimensional utility in various conditions Figure 5.

### Mandukaparni (*Centella asiatica* Linn.)

Previous researches have stated ameliorating effect of CE on learning and memory impairment by either transient bilateral common carotid arteries occlusion (T2 VO) in mice *Centella asiatica* has an important role in improving cognition and memory. One of the main etiological factors associated with Parkinson's disease (PD) is  $\alpha$ -Synuclein aggregation. The aqueous extract of *Centella asiatica* (CA) stops the formation of the oligomer to aggregates and promotes the disintegration of the preformed fibrils<sup>12</sup> Other researchers have demonstrated the relevance of *Centella asiatica* to its anti-oxidant and anti-apoptotic mechanisms. Examination of the neuroprotective effect of *Centella asiatica* on chronic aluminum exposed regenerated mitochondrial enzyme alteration, oxidative stress, apoptosis and cognitive dysfunction in the rat have demonstrated its multi protective effect against aluminum-induced neurotoxicity.<sup>13</sup> Administration of *Centella asiatica* demonstrated enhanced memory performance, oxidative defense decreased aluminum concentration, caspase-3, acetylcholinesterase activity, and reversal of mitochondrial enzyme activity as compared to aluminum-treated animals. The importance of *Centella asiatica* as a neuroprotective agent has been used traditionally in ayurvedic medicine since decades<sup>14</sup> Different reports show its neuroprotective potential by various modes of action such as enzyme inhibition, prevention of amyloid plaque formation in Alzheimer's disease, dopamine neurotoxicity in Parkinson's disease, and reducing oxidative stress. Asiatic acid (AA), a pentacyclic triterpene in *Centella asiatica*, has neuroprotective effects *in vitro* as well as *in vivo*. To reduce glutamate-induced cognitive deficits of mice and protects SH-SY5Y cells against glutamate-induced apoptosis *in vitro*.<sup>15</sup>

### Yastimadhu; *Glycyrrhiza glabra* Linn.

Glycyrrhizin (GL) is a triterpene present in the roots and rhizomes of licorice (*Glycyrrhiza glabra*). It has neuroprotective action in the kainic acid-induced neuronal cell death in the mouse. This is facilitated via suppression of gliosis and inducing pro-inflammatory markers (COX-2, iNOS, and TNF- $\alpha$ )<sup>16</sup> The anti-convulsant potential of aqueous and ethanol extract of *Glycyrrhiza glabra* (AEGG and EGG) and its action on markers of oxidant stress is shown in pentylenetetrazole (PTZ)-induced seizure in albino rats. In the same way, others have demonstrated neuroprotective effects of glycyrrhizin (GL) in the postischemic rat brain after middle cerebral artery occlusion (MCAO).<sup>17</sup> This includes its anti-inflammatory, anti-excitotoxic, and antioxidative effects and shows anti-inflammatory effects. Also tri hydroxy chalcone from *Glycyrrhiza glabra* as a new specific beta-site amyloid precursor protein (APP)-cleaving enzyme 1 (BACE1) inhibitor that effectively ameliorates memory impairments in mice.<sup>18</sup> Glabridin, isolated from the roots of *Glycyrrhiza glabra* can be used in inducing learning and memory in mice. Other research shows that glabridin, a major flavonoid of *Glycyrrhiza glabra* (licorice) has a neuroprotective effect via variation of multiple pathways related to apoptosis. Antidepressant-like activity of *Glycyrrhiza glabra* is seen in mouse models of immobility tests. This is facilitated by enhanced brain norepinephrine and dopamine, but not by increased serotonin.<sup>19</sup> The memory-strengthening activity of *Glycyrrhiza glabra* in exteroceptive and interoceptive behavioral models of memory is also demonstrated. The useful effect on learning and memory by *Glycyrrhiza glabra* (or liquorice) in the mouse brain is due to the modulation of cholinergic-transmission

### Guduchi; *Tinospora cordifolia* (Wild) Miers)

The neuroprotective activity of ethanol extract of *Tinospora cordifolia* aerial parts has been demonstrated in research involving the 6-hydroxy dopamine (6-OHDA) lesion rat model of Parkinson's disease (PD).<sup>20</sup> Verifications for aqueous ethanolic extract of *Tinospora cordifolia* for the

variation-based cure of glioblastomas. Association of Monoaminergic and GABAergic Systems in Antidepressant-like Activity of *Tinospora cordifolia* is demonstrated which involves mouse model of depression using tail suspension test and forced swim test. Other research demonstrated neuroprotective activity of *Tinospora cordifolia* includes modulation of the antioxidant system in rat hippocampal slices subjected to oxygen-glucose deprivation.<sup>21</sup>

### Shankhapushpi; *Convolvulus pluricaulis* (Chois)

This drug is useful in increasing memory and enhancing intellect and helpful for brain disorders like epilepsy.<sup>22</sup> Botanically it is *Convolvulus pluricaulis* (CP, Convolvulaceae). Shankhapushpi is very efficient in anxiety, neurosis, and in the cure of cerebral abnormalities, insomnia, and is a powerful nervine tonic and memory invigorator.<sup>23</sup> It increases memory function because of antioxidants and Acetylcholinesterase Inhibitory Properties. Researchers have demonstrated neuroprotective effects of aqueous extract from *Convolvulus pluricaulis* (CP) against aluminum chloride neurotoxicity in rat cerebral cortex.<sup>24</sup> Confirmations of antioxidant and anticonvulsant activity of Shankhapushpi are also shown by earlier studies.<sup>25</sup>

## CONCLUSION

Although with all the progression in modern medicine today its accomplishment is very lowing neurological and psychiatric disorders because of the multifactorial nature of all these diseases. There is a number of medicines in the modern era which has shown neuro tonic potential and is used in various mental disorders. The ayurvedic system of medicine has established and is practicing this kind of drug as Medhya Rasayana for ages. This revives concludes the idea of modern medical therapy for the treatment of such patients by combating these drugs for improved efficacy. So the necessity to study medicinal plants globally to improve cognitive function with few adverse effects is very essential to conquer cognitive deficit diseases.<sup>26</sup>

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

## ABBREVIATIONS

CP: *Convolvulus pluricaulis*, PD: Parkinson's disease, CA: *Centella asiatica*, 6-OHDA: 6-hydroxy dopamine.

## SUMMARY

The present review summarizes about the rasayana therapy elaborated in Ayurveda. The benefits and the outcomes of the therapy are listed in the review. It is the oldest form of therapy known to humans. The therapy not only enhances the brain ability but also affirms its mental ability. Thus it could be summarized that the medhya rasayana can turn into a brain bracer if added to day to day life.

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