

## MEDHYA RASAYANA- AS COGNITIVE FUNCTIONS PRAMOTOR DRUGS

**Brijesh Kumar<sup>1</sup>, Richa Anand<sup>2</sup>, Sapna Chaudhary<sup>3</sup> Anil kumar singh<sup>4</sup>**

*1,3- Senior Resident Department of Dravyaguna, I.M.S, B.H.U, Varanasi, Uttar Pradesh, India*

*<sup>4</sup>Professor Department of Dravyaguna, I.M.S, B.H.U, Varanasi, Uttar Pradesh, India*

*2 Ph.D. Scholar, Department of Bioinformatics, Indian Institute of Information Technology, Allahabad, Uttar Pradesh, India*

---

Medhya Rasayana is a class of Rasayana drugs, that specially act on medha to promote its function to the optimum level, and the word Medhya means that which is beneficial to Medha ( Medhaye hitam medhyam), produces or improves medha in its absence or its deficiency and its purifying.( Su .S u 45/49 Dalhana) .Rasayan drugs are defined as a group of drugs that aim at improving the quality of the already existing health.

Ayurveda represents an ancient system of traditional Medicine prevalent in India about 5000 years ago, it is considered as the upaveda of atharvaveda, being the oldest recorded wisdom on earth.

Ayurveda on one hand emphasizes on maintenance of health whereas on the other hand have very specific and sound fundamental principles for curing the ailments. Keeping in view the different areas of expertise required to manage different aspects of health and disease.

Ayurveda has eight specialized branches. Among the eight specialties of Ayurveda, Rasayana is a branch exclusively devoted to nutrition, immunology, rejuvenation and geriatrics. According, to acharyacharak, equilibrium of agni, dhatu and srotas are essential, factors for maintaining normal strength, colour and longevity of the body and rasayanas helps to achieve that. The aim of rasayanachikitsa is to nourish body, lymph, flesh, adipose tissue and semen. This prevents the individual from chronic degenerative diseases. Rasayanas could be age specific as they promote nutrition relevant to the natural bio losses occurring at different phases of life span.

All Rasayanas are nutrition promoters in general but there are certain organs and tissue specific Rasayanos viz. Medhya Rasayana for brain, Hridya Rasayana for heart, Chakusya Rasayana for eyes and so on. Those specific to brain tissues called Medhya Rasayana, are claimed to promote cognitive functions of the brain and helps in regeneration of neural tissues besides producing anti-stress and memory enhancing effect and retard brain ageing) Childhood is the period in which all body tissue or Dhatus are immature and are in the process of maturation i.e. growth & development, so giving Medhya Rasayana in this age is very effective to increase I.Q. of children.

## MEDHYA RASAYANA

Medhyarasayana is derived from the Sanskrit words “Medhya” meaning intellect or cognition and “Rasayana” meaning rejuvenation. Cognitive defects that present with many of neuropsychiatric conditions and/or alone as developmental defects demand the use of nootropics to boost cognitive abilities. Recently there is a tremendous urge to explore medicinal plants globally for improving cognitive function owing to their less adverse effects. “Medha” means intellect or retention. It means to have proper co-relation and understanding about the knowledge of the existing objects and the medhyarasayanas used in ayurveda helps in proper working of the medha, so that one can leads a healthy life.

There are number of drugs in ayurveda that are known for their effects on brain but Acharya charak has mentioned a group of 4 drugs under the category of medhyarasayana, there drugs can be used individually or in combinations for the improvement of mental functions. These drugs are:-

1. Mandukaparni
2. Yasthimadhu
3. Guduchi
4. Shankhpushpi

### 1. MANDUKAPARNI:-

**Botanical name** – Centella asiatica (Linn.) Urban

**Family**- Apiaceae

**Synonyms**-Brahmamanduki, Mandukaparni, Mnduki.Saraswati

It is also known as Indian pennywort. It is found throughout India on moist soil, especially along bunds and canals. The plant of Mandukaparni has a slender herbaceous creeping perennial with rooted nodes and long internodes leaves have elongated petioles and sheathing leaf bases, broadly cordate, reniform, crenate or sinuate, toothed, flowers, are pink, almost sessile, 3-4 in fascicled umbels, fruits laterally compressed with two mericarps having 7-9 sub similar ridges.

Mandukaparni is described in Tikta Skandh, prajastapana and vayasthapana mahakashaya of charak samhita and tikta varga of shusruta samhita.

Dosha karma is kapha pitta shamak. Fresh whole plant juice is used for therapeutic purposes as medhya (cognitive enhancer)

The plant is bitter, acrid, sweet, cooling, soporific, cardio tonic, nervine tonic. Centella asiatica has large amounts of pentacyclic triterpenoids including asiaticoside brahmoside, asiatic acid. Other constituents include centellose, centelloside, and madecassoside. The significance of cetella asiatica as a neuroprotective agent have already been used traditionally since decades in ayurvedic medicine.

Various evidences have reported its neuroprotective potential by different modes of action such as inhibition, prevention of amyloid plaque formation, alzheimers disease, dopamind neurotoxicity in alzheimers disease, Dopamine neurotoxicity in parkinsons diseases and decreasing oxidative stress.

It has a neuroprotectives brain growth promoters inhibits the memor impairment induced by scopolamine through the inhibition of Ach E. Mandukaparni (*Centella asiatica* Linn.) is a prostrate, stoloniferous perennial herb rooting at nodes. Fresh whole plant juice is used for therapeutic purposes as Medhya (cognitive enhancer).

Major constituents are saponin (medacoside, asiaticoside, medacassoside, asiatic acid, a new triterpenic acid. They act on behaviour besides being neuroprotectives brain growth promoter. Extracts of *Centella* are used in a herbal cosmetic cream for the improvement of skin viscoelasticity and hydration.

## 2. YASTIMADHU

**Botanical name** – *Glycyrrhiza glabra* Linn

**Family**- Leguminasea

**Synonyms**- Yasti, Timadhuk, Klitaka, Jetimad, Mulhathi, Madhukah

English name is Liquorice.

*Glycyrrhiza glabra* Linn is a perennial shrub, attaining a height upto 2.5 m. The leaves are compound, imparipinnate, alternate, having 4-7 pairs of oblong, elliptical or lanceolate leaflets. The flowers are narrow, typically papilionaceous, borne in axillary spikes, lavender to violet in color. The calyx is short, campanulate, with lanceolate tips and bearing glandular hairs. The fruit is a compressed legume or pod, upto 1.5 cm long, erect, glabrous, somewhat reticulately pitted, and usually contains, 3-5 brown, reniform seeds.

This plant is described in Jivaniya, Sandhaniya, Varna, Sonitasthapana, Kandughna, Chardinigrahana, Snehopaga, Vamanopaga, Muthravirajaniya Mahakasaya of Charak samhita and kakolyadi, sarivadi, anjanadi, brhatyadi, utpaladigana of shusruta samhita.

Fine powder of dried root is used internally with milk for therapeutic purpose as Medhya. *Glycyrrhiza glabra* is an efficient brain tonic; it increases the circulation the CNS system and balances the sugar levels in the blood.

Active ingredients are glycyrrhizine, flavonones, isoflavones, glycyrrhetic acid, six phenolic compounds. Multidimensional activities of yastimadhumay be attributed to glycyrrhizine and flavonones. Liquorice has significant action on memory enhancing activity in dementia. The roots are sweet, refrigerant, emetic, tonic, diuretic, demulcent, mild laxative, aphrodisiac, trichogenous, expectorant; they are useful in hyperdipsia, cough, bronchitis, urelcosis, and vitiated condition of vata.

Fine powder of dried root is used internally with milk for therapeutic purpose as Medhya. Multidimensional activities of Yashtimadhu may be attributed to glycyrrhizine and flavonones. Yashtimadhu is cytotoxic and its prolonged use may lead to pseudoaldosteronism, hyperkalemia and hypertension.

The roots and rhizomes of *Glycyrrhiza glabra* has been studied with respect to spatial learning and passive avoidance preliminary free radical scavenging cerebral ischemia and antioxidant capacity

towards LDL oxidation Glycyrrhiza glabra aqueous extract markedly improves antihypoxic effects induced by sodium nitrite in rats and this effect may be mediated by its antioxidant properties

The roots and rhizomes of Glycyrrhiza glabra is an efficient brain tonic; it increases the circulation into the CNS system and balance the sugar levels in the blood. Liquorice has significant action on memory enhancing activity in dementia it significantly improved learning and memory on scopolamine induced dementia.

### 3. GUDUCHI

**Botanical name** – *Tinospora cordifolia* (Wild) Miers)

**Family**- Menispermaceae

**Synonyms**- Guduchi, Amrita Chinnaruha, Kundalini, Madhuparni, Vatsadani, Chakralakshanika, Chakrangi

This plant has a large extensively spreading glabrous, perennial deciduous twiner with succulent stems and papery bark, leaves simple, alternate, cordate, glabrous, 7-9 nerved, flowers yellow in clusters, female flowers usually solitary, fruits drupe, red when ripe.

The surface of the stem appears to be closely studded with warty tubercles and the surface skin is longitudinally fissured. On removal of the surface skin the dark greenish mucilaginous stem is seen.

This plant is described in Vayasasthapana, Dahaprashamana, Trishnanigraha, Sanyasodha, Triptighna, Mahakasaya of Charak Samhita and Guducyadi, Patoladi, Raghvadari, Kakolyadi, Vallipanchamula of Shusruta Samhita.

Dosha karma is tri-doshashamak. Juice of whole plant is used therapeutically as “Medhya Rasayana” it is also used in the form of decoction, powder and satwa (Starch extract of stem).

Its root is known for its anti stress, antileprotic and anti malarial activities. It is a rich source of trace elements (zinc and copper) which act as antioxidants and protect cells from the damaging effects of oxygen radicals generated during immune activation.

Guduchi have alkaloids, diterpenoid lactones, glycosides, sesquiterpenoid, phenolics polysaccharides, and aliphatic compounds. *Tinospora cordifolia* has been claimed to possess learning and memory enhancing and antistress activity. It enhances the cognition in normal and cognition defects.

Mechanism of cognitive enhancement is by immunostimulation and increasing the synthesis of acetylcholine, this supplementation of choline enhance the cognition.

Guduchi (*Tinospora cordifolia* (Wild) Miers) is a large glabrous, deciduous, climbing shrub of Menispermaceae family found throughout tropical India. Juice of whole plant is used therapeutically as Medhya. Chemical constituents' classes are alkaloids, diterpenoid lactones, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds and polysaccharides.

Neuroprotective and ameliorative properties are due to their antioxidant and trace element contents. *Tinospora cordifolia* is known to be a rich source of trace elements (Zinc and Copper)

which act as antioxidants and protects cells from the damaging effects of oxygen radicals generated during immune activation. It increases the blood profile and has lead scavenging activity. *Tinospora cordifolia* has been claimed to possess learning and memory enhancing, antioxidant, and anti-stress activity.

#### 4. SHANKHAPUSHIPI

**Botanical name** -*Convolvulus pleuricaulis* Choiss

**Family**-Convolvulaceae

**Synonyms** – Ksheerpushpi, mangalyakusuma.

**Habitat**- It is a perennial prostrate or sub erect spreading hairy herb. Found throughout India Leaves ovate lanceolate to linear, flower 2-4 together sessile on pedunculate head, seeds are brown black, minutely puberulous, densely to sparsely white pubescent.

Dosha karma is vata-pitta shamak. Fine pasta of whole plant is highly used as medhya (intellect promoter). Its chemical constitution has microphyllic acid, shankhpushpin, kaempferol-3-glucoside, 3,4-dihydroxycinnamic acid, sitosterols. It has a neuroprotective and intellect promoting activity implicated to free radical scavenging and antioxidant property.

It is found to be effective in anxiety, neurosis and used in cerebral abnormalities, insomnia & serve as wonderful nervine tonic and memory enhancer. This drug is also known for its action on boosting memory and improving intellect and beneficial for brain disorders like epilepsy.

Recommended therapeutic form is fine paste of whole plant. Highly regarded as Medhya (intellect promoter). Herbalists believe that Shankhpushpi calms the nerves by regulating the body's production of the stress hormones, adrenaline and cortisol. Few investigations reports that Shankhpushpi has potent depressive action in mice. *Convolvulus pleuricaulis* whole plant extract, shows the highest inhibitory activity against *Helicobacter muridarum*.

Drugs	Rasa	Guna	Virya	Vipaka
<i>Mandukaparni</i>	Tikta	Laghu	Sita	Madhur
<i>Yashtimadhu</i>	Madhur	Guru, Snigdha	Sita	Madhur
<i>Guduchi</i>	Tikta, Madhur	Guru, Snigdha	Ushna	Madhur
<i>Shankhpushpi</i>	Tikta	Snigdha, Picchil	Sita	Madhur

## CONCLUSION

“Medhya Rasayanas” are the group of medicinal plants described in Ayurveda with multi benefits especially to improve memory and intellect by its prabhava (specific action). These plants are used

both in herbal and conventional medicine and offer benefits that pharmaceutical drugs lack. Neurological and psychiatric disorders are generally associated with loss of memory, cognitive defects, impaired mental function etc.

Prabhava janya karma i.e action exerted due to the combination of Panchamahabuta in a way very unique to the specific dravya only and not seen in other with similar Rasa,Guna,Virya and Vipaka. .

Description of medhyarasayana found in samhitas indicates special utility of these types of rasayanas. Apart from rasayans in general, “MedhyaRasayana” drugs play an essential role in the treatment of psychiatric and psychosomatic disorders. The mode of this therapy involve the individual to attain sedation, calmness, tranquility or a stimulation of activities of brain.

Medhya rasayana drugs are used for prevention and treatment of mental disorder of all age groups. These drugs promote the intellects(Dhi), retention power (Dhriti), memory(smriti). In fact they produce neuronutrient effect by improving cerebral metabolism.

“MedhyaRasayana” drugs are known to have specific effect on mental performance by promoting the functions of “Buddhi” and “Manas” by correcting the disturbances of “Rajas” and disturbed “Tamas”. This helps the mentally disturbed patients to get relieve from stress, anxiety and depression.

## REFERENCES

1. Acharya YT, editor, (1sted.) Charaka Samhita with Chakrapani's Ayurveda DeepikaTeeka, ShariraSthana; Katidhapurushiya- shariya, chapter 1 Verse-21,23 Varanasi;ChoukhambaPrakashana; 1994. Agnivesha; 288,289
2. Acharya YT, editor, (1st ed.) sushrutsamhita with Dalhan'sNibandhaSangrahaTeeka, ChikitsaSthana; Sarvopaghatshamaniya, Chapter 27, Verse-1 Varanasi: Choukhamba Sanskrita Sansthana, 2009; 498
3. Pandit Hari Sadashiv Sastri Paradakar, editor,(1sted.) AshtangHridaya of Vagbhatta with commentary Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Sutra Sthana; DravadravyaVidyaniya, Chapter 5 Versa-37 Varanasi; Choukhamba Sanskrita Sansthana, 2010;
4. Acharya YT, editor, (1sted.) Charaka Samhita with Chakrapani's Ayurveda DeepikaTeeka, VimanaSthana; TrividharogavisheshVidyaniya, Chapter 4 Verse-8 varanasi; Choukhamba Prakashana; 1994. Angivesha; 247
5. Acharya YT, editor, (1st ed.) sushrutasamhita of sushruta withDalhan'snibandhasangrahateeka, sutra sthana; annapana-vidhi, chapter 46, verse-150 varanasi; choukhambasanskritasansthana, 2009; 227
- 6.Chunekar KC, editor, BhavaprakashaNighantu of Bhavmishra, guducyadivarga verse-279-283, Chaukhambhabharati academy, Varanasi, reprint 2010. P 461.

7. Sharma PC, Yelne MB, Dennis TJ. Database on medicinal plants used in ayurveda and sidha. Vol. 1. New Delhi; CCRAS, Dept. of AYUSH, ministry of Health and family Welfare, Govt. of India; 2000. Pp. 26479.
8. Ravichandra V, Ahalyadevi, Adiga S. Evaluation of the effect of Glycyrrhizaglabralinn. Root extract on spatial learning and passive avoidance response in rats. Indian Drugs, 2007; 44:2149.
9. Muralidharan P, Balamurugan G, Venu- Babu. Cerebroprotective effect of Glycyrrhizaglabra Linn. Root extract on Hypoxic rats. Bangladesh J pharmacol. 2009; 4:604.
10. Dhingra D, Parle M, Kulkarni SK. Memory enhancing activity of GlycyrrhizaGlabra in mice. J ethnopharmacol. 2004; 91:3615.[PubMed]
11. Chunekar KC, editor, Bhavaprakashanighantu of bhavmishra, guducyadivarga, verse-6-10, chaukambhabharati academy, Varanasi, reprint 2010. P 269.