



Review on: Medhya Rasayana Drugs in Ayurveda

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Abstract:

In the Ayurvedic system of medicine there are several medicinal preparations under the category 'Medhya'. By virtue of inducing mental upliftment as major influence several medicinal plants mentioned as 'Rasayana drugs' in Ayurveda are primarily claimed as 'Medhya'. Further there is a special class of Rasayana drugs called 'Medhya Rasayana' which is supposed to be having specific influence on brain functions. According to Ayurveda both Vata and Kapha Dosha must be harmonized in order to increase Medha or Intellectual. Memory is improved when Vata and Kapha are together. Pitta Dosha (fire element) is important for increasing sharpness and IQ. To accomplish this objective by balancing the Tridosha, Ayurveda refers to both single medications and a class of pharmaceuticals are named as "Medhya Rasayanas" in the Charaka Samhita. They are Mandukaparni Swarasa (Centella asiatica), Yashtimadhu Churna (Glycyrrhiza glabra), Guduchi Swarasa (Tinospora cordifolia), and Shankhapushpi Kalka (Convolvulus pluricaulis). Mandukaparni Swaras, Yashtimadhu Churna with Ksheer, Guduchi Swaras, and Shankhapushpi Kalka are anxiolytic, disease-relieving, and boosters of strength, Agni, complexion, voice and Medhya. Medhya Rasayana medicines are used to suppress and treat mental illnesses in people of various ages. These medications improve the ability to acquire (Dhi), retain (Dhriti), and remember information (Smriti). Medhya Rasayana medicines are used to prevent and cure mental disorders and health Promotion in people of all age's groups.

KEYWORDS: Medhya Rasayana, Memory, Medha, Doshas, Charakha Samhita, tridosha

INTRODUCTION

The intellectual capability has naturally become a matter of concern for the scientific community. The analysis of the mind and intellect from different angles and their explanations are abundantly available in the Ayurvedic literature. The description regarding the concept of Medhya Rasayana (memory promoting rejuvenation therapy) is one among them. Medha means intellect and/or retention and Rasayana means therapeutic procedure or preparation that on regular practice will boost nourishment, health, memory, intellect, immunity and hence longevity. It requires reconsideration and application in present scenario, as it can be a powerful solution for many of the psycho-somatic problems. The description of Medhya Rasayana found in Samhita granthas (authoritative scriptures) indicates the specific utility of this type of Rasayana. In Charaka Samhita there is no direct mentioning of Medhya Rasayana as an independent type. But there is mentioning of four drugs viz. Mandookaparni svarasa (juice), Yashtimadhu choorna (powder) with Goksheera (Cow's milk), Guduchi svarasa and Shankhapushpi kalka (paste) as Medhya Rasayanas. The properties ascribed to these formulations include Medhya (memory promoting), Ayushya (longevity enhancers), Amaya nashana (eradicate diseases) and Balagni varna svava vardhana (enhances strength, digestive fire, complexion and voice). In Sushruta Samhita more information pertaining to the Medhya drugs can be found such as different formulations with their mode of use etc. The chapter named 'Medhayushkameeyaadhya' is meant for the description of the same. In Sangraha granthas (compiled scriptures) and in Bhava Prakasha and Yoga

Ratnakara the four Medhya drugs are mentioned along with other Medhya formulations.

Aims and objectives

An attempt has been made to look into the memory promotive aspect of *Medhya rasayana* drugs, their method, mode and time of administration; utility, mode of action and modern researches on some *Medhya* drugs.

Method of administration

According to *Acharya Charaka*, *Medhya rasayana* can be administered in the way of *Vatatapika rasayana* (rejuvenation therapy having no restrictions) and as per *Acharya Susruta*, *Kutipraveshika rasayana* (rejuvenation therapy involving specific rules) procedure is followed.

Mode of administration

- *Purva karma* (Pre-operative procedure) – *Koshta shuddhi* before the administration is essential like that of other *Rasayanas*.
- *Pradhana karma* (Operative procedure) - Different forms of *Medhya* drugs are explained such as *Svarasa* (juice), *Kalka* (paste) etc. Similarly the dose, duration and adjuvant will also vary depending upon the specific *yoga* (formulation). Ex: *Shveta Avalgujadi Rasayana* is taken along with *Ushna jala* (luke warm water) for 6 months whereas *Vacha Rasayana* is administered with *Goksheera* for 48 days.
- *Paschat karma* (Post-operative procedure) – After the digestion of *Medhya rasayana pathyapathya* (do's and don'ts) should be followed. *Shashtika shali* (A variety of rice) with *Ghrita* (Cow's ghee) and *Ksheera* (milk) is the *Pathya* (wholesome) mentioned for many of the formulations.

Time of administration

Early morning before food is the ideal time for the administration of *Medhya Rasayana*.

Utility of *Medhya rasayana*. *Medhya Rasayana* has a specific purpose of benefitting *Medha* in particular and they do not have broad spectrum of action like other *Rasayanas*. As per *Acharya Susruta*, the benefits derived from *Medhya Rasayana* and their applied aspects are enlisted below.

1. *Shruta Nigadi* (Power of retention of scriptures)
2. *Smrutiman* (Endowed with good memory)
3. *Medhavi* (Becomes genius)
4. *Grantham Ipsitam utpadayati* (Develops enthusiasm to read the scriptures)
5. *Nastam cha Pradurbhavati* (Power to recollect the forgotten)
6. *Dvirucchaaritam shatamapi avadharayati* (Capable of retaining 100 words spoken only twice)
7. *Moorthimatiscca enam vagdevyanupravishtiyati*
(Goddess of speech enters one's body)
8. *Sarvaischa enam shrutayaupatishtanti* (All the srutis (Vedas and other scriptures) remain within)
9. *Shruta dharaya panchavarsha shatayur bhavati* (Power of remembering the scriptures and a life of 500 years)
10. *Shrotram vivriyate* (Endowed with good hearing capacity)
11. *Dvirabhyasat smrutiman bhavati* (Endowed with good memory)
12. *Trirabhyasat shrutamadatte* (Retains the scriptures in one's mind)
13. *Sarvam tarati kilvisham* (Gets rid of all blemishes)

Probable mode of action of *Medhya Rasayana*

The *Medhya* effect of *Rasayana* can be considered as *Prabhava janya* (unthinkable and unimaginable). This attribution holds good since the action of *Medhya dravya* cannot be related to a particular quality of the drug. Maintaining of normal functioning of *Sadhaka pitta* and *Tarpaka kapha* is the desired action of any *Medhya* drug. *Medhya* drugs also act on *Manasika bhavas* (faculties of mind) there by relieving anxiety, stress etc. They are having *Mastishka balya* (nourishing brain) property. It is very difficult to conclude the mode of action of *Medhya Rasayanas* as the mechanism of *Medha* is very complex one and the properties of *Medhya Rasayana* are also not uniform.

Researches on *Medhya Dravyas Mandukaparni (Centella asiatica Linn.)*

1. Major constituents of it are saponins, medacoside, asiaticoside, medacassoside and asiatic acid, a new triterpenic acid.
2. They act on behavior besides being neuro-protectives and brain growth promoters. Dendritic arborization is supposed to be the neuronal basis for improved learning and memory.
3. Anti-seizure activity may result from direct or indirect modulation of ATPase activity. *Centella asiatica* Linn. inhibits the memory impairment induced by scopolamine through the inhibition of AChE.
4. Methanol extract of *Centella asiatica* Linn. showed highest free radical scavenging activity that can be attributed to the presence of polyphenols and flavonoids as this fraction contains maximum amount of these secondary metabolites (0.07 mg/ml). These two namely poly phenols and flavonoids are responsible for potent anti-oxidant activity and terminate free radicals.
5. *Centella asiatica* Linn. extract selectively decreases amyloid beta levels in hippocampus of Alzheimer's disease animal model.
6. *Centella asiatica* Linn. accelerates nerve regeneration upon oral administration and contains multiple active fractions increasing neurite elongation in-vitro.

Yasthimadhu (*Glycyrrhiza glabra* Linn.)

1. The roots and rhizomes of *G. glabra* have been studied with respect to spatial learning and passive avoidance, preliminary free radical scavenging, cerebral ischemia and antioxidant capacity towards LDL oxidation.
2. *Glycyrrhiza glabra* Linn. aqueous extract markedly improves anti-hypoxic effects induced by sodium nitrite in rats and this effect may be mediated by its antioxidant properties.
3. The roots and rhizomes of *Glycyrrhiza glabra* Linn. is an efficient brain tonic; it increases the circulation into the CNS system and balances the sugar levels in the blood.
4. Liquorice has significant action on memory enhancing activity in dementia. It significantly improved learning and memory on scopolamine induced dementia.

Guduchi (Tinospora cordifolia (Willd) Miers.)

1. Its root is known for its anti-stress, anti-leprotic and anti-malarial activities.
2. Chemical constituents' classes are alkaloids, diterpenoid lactones, glycosides, steroids, sesquiterpenoids, phenolics, aliphatic compounds and polysaccharides.
3. Neuro-protective and ameliorative properties are due to their antioxidant and trace element contents.
4. *Tinospora cordifolia* (Willd) Miers. 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.
5. It increases the blood profile and has lead scavenging activity.

6. *Tinospora cordifolia* (Willd) Miers. has been claimed to possess learning and memory enhancing and antioxidant activities
7. *Tinospora cordifolia* (Willd) Miers. enhanced the cognition in normal and cognition deficit animals in behavioural test Hebb William maze and the passive avoidance task. Mechanism of cognitive enhancement is by immune-stimulation and increasing the synthesis of acetylcholine, this supplementation of choline enhances the cognition.
8. Myriad actions of *Guduchi* may be attributed to its antioxidant and immune-modulatory properties.

Shankhapushpi (Convolvulus pleuricaulis Chois.)

1. Important chemical principles are microphylllic acid, shankhapushpin, kaempferol-kaempferol-3-glucoside, 3, 4 dihydroxycinnamic acid and sterols. Neuro-protective and intellect promoting activity is implicated to the free radical scavenging and antioxidant properties.
2. BR-16A (Mentat) a poly-herbal combination containing *Shankhapushpi* significantly reversed the social isolation stress-induced prolongation of onset and decrease in pento-barbitone-induced sleep, increased total motor activity and stress-induced anti-nociception in experimental model.
3. Ayushman-8 (containing *Shankhapushpi*, *Brahmi* and *Vacha*) reported to be effective on *Manasa-mandata* (mental retardation).
4. *Shankhapushpi* compound containing *Shankhapushpi*, *Sarpagandha*, and *Gokshura* in equal quantities are studied to be effective in *Chittodvega* (anxiety disorders)
5. *Shankhapushpi* is effective in relieving signs and symptoms of *Chittodvega* (anxiety disorders)
6. Herbalists believe that *Shankhapushpi* calms the nerves by regulating the body's production of the stress hormones, adrenaline and cortisol
7. Few investigations report that *Shankhapushpi* has potent depressive action in mice.
8. *Convolvulus pleuricaulis* Chois. whole plant extract, shows the highest inhibitory activity against *Helicobacter muridarum*.
9. *Convolvulus pleuricaulis* Chois. aqueous extract possesses neuro-protective potential, thus validating its use in alleviating toxic effects of scopolamine.

Brahmi (Bacopa monnieri (L.) Wettst.)

1. It is commonly called as *Brahmi* and it belongs to Scrophulariaceae family. *Bacopa monnieri* (L.) Wettst. is a well-known nootropic plant reported for its tranquilizing, sedative action, cognitive enhancer, hepato-protective, memory enhancer and antioxidant actions.
2. Neuro-protective activity may be ascribed to having its reactive oxygen species scavenging property.
3. *Bacopa monnieri* (L.) Wettst. is a saponin rich plant. Bacosides are the main active nootropic principles present in the alcoholic extract of the plant.
4. Isolation of a new saponin, a jujubogenin, named bacopasaponin G, and a new glycoside, phenyl-ethyl alcohol was reported. Three new saponins designated as bacopasides III, IV and V were isolated. Apart from memory enhancer activity, these bacosides have the potential to modulate the activities of heat shock protein (Hsp70) expression, cytochrome P450 and superoxide dismutase in the rat brain.
5. On rats, alcoholic extract increases both cognitive function and retention capacity, decreases retrograde amnesia and protects from phenytoin - induced cognitive deficit.
6. It is mainly utilized in the treatment of memory and attention disorders.
7. Recent studies have indicated antioxidant effect of bacosides (triterpenoid saponin isolated from *Bacopa monnieri* (L.) Wettst.) against chronic toxin induced oxidative damage in rat brain and thyroid T4 hormone stimulating activity in animals in high doses.

8. *Brahmi rasayana* might prove to be a useful memory restorative agent in the treatment of dementia seen in elderly.
9. *Brahmi* decreases the rate of forgetting of newly acquired information

Jyotishmati (*Celastrus paniculatus* Willd.)

1. Seed oil (*Jyotishmati Taila*) is known for *Medhya* action
2. This oil contains several terpenoids like paniculatadiol, b-sitosterol, celastrol, b-amyrin, pristimerin, but its most investigated components are its many sesquiterpenoids, dihydro-agarofuran-type polyols or esters
3. *Celastrus paniculatus* Willd. showed antioxidant activity by decreasing the lipid peroxidation and anti-arthritis activity in rat model
4. Seed oil of *Celastrus paniculatus* Willd. (*Malkangni*) reversed scopolamine-induced deficits in navigational memory task in young adult rats.

Kushmanda (*Benincasa hispida* (Thumb.) Cogn.)

1. Phytochemical analysis of *Benincasa hispida* (Thumb.) Cogn. shows presence of alkaloids, flavinoids, saponins and steroids
2. *Benincasa cerifera* Savi. serves as Reactive Oxygen Species scavenger and an antioxidant effective agent
3. It has a tissue protective preventive effect on colchicine induced Alzheimer's disease via direct and indirect antioxidant activity
4. *Kushmandadi Ghrita* showed significant results in the management of *Chittodvega* (anxiety disorders).

Vacha (*Acorus calamus* Linn.)

1. Rhizome is useful part having *Medhya* quality. It has been used in Indian and Chinese systems of medicine for hundreds of years to cure diseases especially the central nervous system (CNS) abnormalities.
2. Active chemical principles are α -asarone, elemicine, cis-isoelemicine, cis and trans isoeugenol and their methyl ethers, camphene, P-cymene, b-gurjunene, a-selinene, b-cadinene, camphor, terpinen-4-ol, aterpineol and a-calacorene, acorone, acronone, acoragermacrone, 2-deca-4,7 dieneol, shyobunones, linalool and preisocalamendiol. Acoradin, galangin, 2, 4, 5-trimethoxybenzaldehyde, 2,5-dimethoxybenzoquinone, calamendiol, spathulenol and sitosterol are also present.
3. It has been proved for its analgesic and anti-convulsant, hepato-protective, antioxidant anti-mutagenic, sedative and hypothermic effects.
4. Good in clearing speech to the children and useful in schizophrenic psychosis.
5. Food and Drug Administration banned usage of its oil in food formulations and in other therapeutic preparations due to carcinogenic and toxic properties of β -asarone compound

Jatamansi (*Nardostachys jatamansi* DC.):

1. Rhizome is used for medicinal purposes as it is *Bhutaghna* or *Manasa Dosha hara* (relieves psychiatric problems) and *Medhya*
2. Roots and rhizomes of *N. jatamansi* DC. are used to treat hysteria, epilepsy, and convulsions.
3. The decoction of the drug is also used in neurological disorders, insomnia and disorders of cardiovascular system.
4. Rhizomes contain a terpenoid ester, nardostachys .
5. It is proven to improve learning and memory in mice and also to enhance biogenic amine activity.
6. An acetone extract of *N. Jatamansi* DC. has shown significant inhibition of benzoyl peroxide-induced

cutaneous oxidative stress, toxicity, and ear oedema in mice-

DISCUSSION

Poor memory and intellectual, according to Ayurveda, can be caused by a variety of factors, the most common of which are malnutrition and chemical imbalances in brain functioning. According to Ayurveda, memory problem is caused by the Kapha Dosha of the body, which is vitiated and causes a dull mind or disinterestedness. In the same way, a vitiated Vata Dosha causes stress and confusion, obstructing knowledge and memory. All nerve functioning and memory is controlled by the Vata Dosha. Any medicine that improves this process of grasping, remembering, and recalling will be extremely beneficial, especially to children. For this harmonization, Ayurveda refers to both single medications and a class of pharmaceuticals as "Medhya Rasayana." Four medicinal plants are named as "Medhya Rasayanas" in the Charaka Samhita. These drugs promote the intellect, retention power and memory, moreover rasayana drugs work on hypothalamus pituitary adrenal axis and normalize the secretion of neurotransmitters such as dopamine, Serotonin, acetyl choline and thus can improve the mental function.

CONCLUSION

Medhya Rasayana aid to improve brain circulation, change neurotransmitter concentrations, reduce brain inflammation, activate the production of new brain cells, and protect the brain from free radical damage. According to Ayurveda, Medhya Rasayana accomplish enhancing intellectual capacity objective by balancing the tridosha. At the level of Rasa, Medhya Rasayana work by stimulating and increasing the function of agni, as well as promoting Rasa circulation by opening and cleansing the micro channel for improved mental performance. As a result, medicinal plants must be explored internationally in order to improve cognitive function and mental performance due to their low risk of side effects.

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