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Review Article

A NARRATIVE REVIEW ON THERAPEUTIC POTENTIAL AND EFFICACY OF *MEDHYA RASAYANA*

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ABSTRACT

Anything that imbalance body and mind is known to cause disease. Nowadays, mental health has been becoming a global threat to the world. Ayurveda has a novel concept of *Rasayana*. *Medhya Rasayana* that has been classified under *Rasayana* for the stability of *Dhi*, *Dhriti*, *Smriti*. The action of *Medhya Rasayana* is explained with the help of using neurons and neurotransmitters in modern neurophysiology. Information is gathered from various Nighantus, Samhitas, other Ayurvedic textbooks and various online sources such as Google scholar, Sci-hub, Science Direct etc. *Medhya Rasayana* has a very good anti-oxidant, adaptogenic, anabolic, anti-stress and anti-depressant property. This literature review article is about the four medicinal plants such as *Mandukaparni* (*Centella asiatica* Linn.), *Yasthi madhu* (*Glycyrrhiza glabra* Linn.), *Guduchi* (*Tinospora cordifolia* (Willd.) Hook. F. and Thomas.), *Sankhpushpi* (*Convolvulus pluricaulis* Chois) which are most common *Medhya Rasayana* mentioned in Ayurvedic samhitas, Nighantus etc.

INTRODUCTION

Ayurveda is the science where *Atma*, *Mann*, *Indriya*, *Indriya vishaya* established a kind of co-ordinations to come in light of the knowledge about any particular subject. The inputs received by Panchgnynanendriyas are stored in the form of memory and recall at proper time. According to WHO, health is a status of complete physical, mental and social well-being. *Rasayana* rejuvenates the body functions up to molecular level. Some of the drugs in *Rasayana* are organ and tissue specific. Those *Rasayana* which are specific to brain tissues are considered as *Medhya Rasayana*. *Medha* means intelligence or power of retention and *Rasayana* means rejuvenation therapy[1].

Mandukaparni, *Yasthi madhu*, *Guduchi*, *Sankhpushpi* are most common among all of *Medhya Rasayana* mentioned in Charaka Samhita. The word nootropic was derived from the Greek words nous means "mind" and trepein means "to bend/turn".

Nootropic drugs improve the oxygen supply of brain by stimulating the nerve growth. *Medhya Rasayana* works on *Dhi* (power of grasping), *Dhriti* (power of retention) and *Smriti* (power of recollection)[2]. In Ayurveda, *Medhya* drug enhances the level of neurotransmitters and also blood flow to the brain, improves oxygen and nutrition availability towards the brain[3].

Rasayana retard brain aging and help in regeneration of neural tissues besides producing anti-stress, adaptogenic and memory enhancing effects. It improves cognition, memory, intelligence, creativity, learning skills and executive functions. Additionally, these supplements also boost immunity and improve functions of immune system. Herbs in *Medhya Rasayana* improve skills to acquire knowledge, improve the power of retention and increase memory and also improve the capability of the brain to process information, store information, remembering things and recovering information from the brain.

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Table 1: *Medhya Rasayana*

S.No.	*Medhya Rasayana*[4]	Latin name	Family name	Synonyms
1	*Mandukaparni*	*Centella asiatica* (Linn.)	Apiceae	*Manduki*, *Mahausadhi*, *Divya*, *Twastri*, *Saraswati*
2	*Yastimadhu*	*Glycyrrhiza glabra* (Linn.)	Fabaceae	*Madhuka*, *Klitaka*
3	*Guduchi*	*Tinospora cordifolia* (Willd.) Hook. F. and Thomas.	Menispermaceae	*Cakralaksanika*, *Tantrika*, *Amrta*, *Amrtavallari*, *Mandali*, *Kandodbhava*, *Chinnaruha*, *Vatsadani*
4	*Shankhapushpi*	*Convolvulus pluricaulis* Chois	Convolvulaceae	*Ksheerpushpi*, *Mangalyakusuma*, *Supushpi*

Botanical Description

Mandukaparni (Fig.no.1) - A slender herbaceous creeper. Stem is long, weak, cylindrical, prostrate coming off from the leaf-axials of a vertical root stock, often reddish with long internodes. Leaves are 1.5-6.5cm in diameter, simple, arising in group from nodes, orbicular or reniform, crenate and often lobed, glabrous, shining. Inflorescence is a racemose, simple umbels, 3-6 flowered cymosely fascicle at the end of a very short axillary pubescent or glabrous green or pinkish peduncle about 0.5cm long with two small ovate acute concave involucre bracts 3 to 4mm long at the top that embrace flower. Flowers are pedicellate, small bracts, ovate, embracing the flowers, hermaphrodite, actinomorphic, regular, complete, epigynous[5].

Mulethi (Fig.no.2) – A herbaceous perennial upto the height of 1m. Leaves are pinnate with 9-17 leaflets, about 7-15cm long. Flowers are purple to pale whitish blue, 0.8-12cm, in a loose inflorescence. Fruit is an oblong pod, 2-3cm long, contains several seeds[6].

Guduchi (Fig.no.3) - A deciduous, glabrous, rapidly ascending shrub with several coiling branches extending approximately 3-4 feet in height and foot long[7]. Stem is geyish brown – black in colour, bitter in texture, dry, cylindrical having circumference from 5mm to 25mm[8]. Bark is slender, greyish or texture creamy when exposed to meticulously peeled stem[9]. Leaves are rounded, cordate with multi-coated reticulated midrib, 5-10cm long, simple, alternate, ex-stipulated, long petiolate 2.5-7cm[10]. Flowers are yellow or yellow-greenish and tiny[11]. Fruit is red, fleshy with extensive drupelets on a thick stalk with border sub-terminal form, coloured scarlet[12].

Shankhapushpi (Fig.no.4) - A perennial plant whose branches are widely spread on the ground, long upto 30cm. Stems are cylindrical with hairy nodes and internodes. Leaves are 10.5-2cm. long and 0.1-0.5cm broad light green in colour, shortly petiolate linear-lanceolate, acute, hairy on both surfaces. Flowers are white or purple in colour, solitary or in pairs, sessile or sub-sessile in the leaf axis. Fruits are capsuled, oblong globose with coriaceous, pale brown pericarp[13].

Fig. no. 1

Fig. no. 2

Fig. no. 3

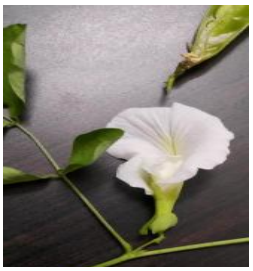

Fig. no. 4

Pharmacological Actions

Medhya Rasayana acts at different levels such as *Rasa*, *Agni* and *Srotsa*[14]. *Medhya drugs* act according to their *Prabhava* specifically to improve memory and intellect[15]. *Amla*, *Lavana* and *Katu rasa* are considered of being least important in *Medhya* action. Similarly, *Ushana veerya* drugs stimulate *Saadhak pitta* that helps in promoting *Medhya* action. Majority of drugs are having *Madhura vipaka* which provide nourishment to the brain by forming *Ooja dhatus*. Therefore, these drugs have beneficial effect on body as well as on mind. *Parana vayu* and *Udana vayu*[16,17], *Sadhaka pitta*[18], *Tarpaka* and *Avalambaka kapha*[19] have been considered to contribute in *Medhya* action of the medicinal plants.

Table 2: *Medhya Rasayana* herbs properties

S.No.	Drugs[20]	*Rasa*	*Guna*	*Veerya*	*Vipaka*	*Karma*
1	*Mandukaparni*	*Tikta*	*Laghu*	*Sheeta*	*Madhura*	*Medhya*
2	*Yashtimadhu*	*Madhura*	*Guru, Snigdha*	*Sheeta*	*Madhura*	*Chedana* (*Shleeshara*)
3	*Guduchi*	*Tikta, Kashaya*	*Guru, Snigdha*	*Ushna*	*Madhura*	*Rasayana*
4	*Sankhpushpi*	*Tikta*	*Snigdha, Picchila*	*Sheeta*	*Madhura*	*Medhya*

Neuronal dendritic growth property is effective in reducing brain regional lipid peroxidation (LPO) and protein carbonyl (PCO) levels thus increases anti-oxidant status and improves the altered levels of neurotransmitters such as 5HT, acetylcholine, epinephrine, nor - epinephrine, GABA (gamma-aminobutyric acid) and Glutamate[21]. *Medhya Rasayana* increases circulation in the brain, varies the concentration of neurotransmitters, prevents inflammation of the brain, activates the formation of new brain cells and protect the brain from free-radical damage[22].

Table 3: Pharmacological action

S.No.	*Medhya* Plants	Phytochemistry	Pharmacological action
1	*Mandukaparni*	Asiaticoside	The concentration of GABA (γ-aminobutyric acid) increases in the brain[23]. Neuro protective and has anti-oxidant properties[21].
2	*Yastimadhu*	Glycyrrhizin	Enhance glucose bioavailability at the brain level, thus improves brain activity[24].
3	*Guduchi*	Tinosporin, Choline, Palmitine, Tembetarine, Jatrorrhizine.	Neuroprotective effects[25,26,27,28].
4	*Shankapushpi*	Convolvine	Responsible for blocking M2 and M4 cholinergic muscuranic receptors [29]
		Arecoline	Muscuranic memory enhancer[29]
		Ayapanin	Improves scopolamine-induced spatial memory impairment[30].

CONCLUSION

Ayurveda being a life science can offer solutions to reduce the number of incidences and treat disorders related to Nervous system. *Medhya Rasayana* are Ayurvedic supplements, which improve the power of acquisition, retention, and recollection. *Medhya Rasayana* also increases overall immunity, metabolism, skin luster, voice and in the treatment of various other diseases. Drugs related to *Medhya* actions mainly act on the basis of anti-oxidant, adaptogenic or essential chemical constituents present in it. Their activity on nervous system requires further more proper justification, so that it can be used clinically either alone or in combination with other ingredients.

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