

A CRITICAL REVIEW ON *MEDHYA RASAYANA* AND ITS
MALIABILITY WITH NEURAL CONNECTION

*¹Kulkarni Oorvi.

²A.S Prashanth.

¹PG Scholar, Ayurveda Mahavidyalaya Hubli, Heggeri.

²BOS Chairman Of UG Studies RGUHS Bangalore,HOD,Dept Of Kayachikitsa, Ayurveda Mahavidyalaya Hubli, Heggeri.

ABSTRACT

Ayurveda, a Divine science with a divine origin has made its existence till today only because of its wide diversities in herbal, herboimineral and mineral based formulations. Apart from that the treatment principles are excellent and have been planned with dew care. With such a background Ayurveda has been roaring in the society. Our Acharyas talk about both *Mansika swasthya* and *shareerika swasthya*. In today's world *shareerika swasthya* is possible by many ways explained in Ayurvedic text and preventive measures are also written. *Mana*, *Mathishka*, *budhi*, are other entities which have been constantly working to keep up the heigher mental functions. In modern there is a wide explanation of organs related to these heigher mental functions but when it comes to the working and pathogenesis of any neural/nervous disorders there are only hypothesis proposed. Most of the heigher mental functions/coagnitive fuctions are carried by sneurons. Neurons are the basic cells of nervous system which involve as a part of *rachana shareera* and the impulse which are been transmitted and the participation of many chemicals in this act, is the part of *shareera kriya*. Neural connections can be improved by many herbs described in Ayurveda . The main aim of the proposed study is to understand and interpret how application of *Medhya Rasayana* will help in improving these neural connections either by directly nourishing *mastishka* or by *samprabhodana* of the structural components participating in the formation of intellect could be the purpose and by this we can also tackel the cognitive disorders etc

Keywords: *Medhya rasayana*, neurotransmitters, active principles, Gut- brain axis.

INTRODUCTION: The description regarding *Medhya Rasayana* which is one such concept that requires reconsideration and application. It improves the life span, intelligence, Memory power, promotes health, provides youthful states of the body, improves cognitive abilities, enhances the innate health and delays aging. In Ayurvedic classics, we find many descriptions regarding *Medhya Rasayana* which promote *Pradnya (Dhi, Dhruti, and Smruti)* In Ayurveda , health is defined as the equilibrium state of *atma, indriya Mana, dosha dhathu mala Agni*. This definition necessitates pleasant mind for normal health. To get balanced health,

nutritious food is essential (*satvika aahara*) for proper nourishment. If there is a deficiency then it leads to reciprocal between *manas* and *sharira*. Due to this, *manas* may get afflicted and leads to more mental stress and strain which may lead to some major and minor, *mansika vikruti*. These *manovikruthis* are exhibited through abnormal behaviours.¹

Medhya Rasayana is elaborated into two words '*Medhya*' and '*Rasayana*'. Most popular *shabdha kalpa druma*² (*shabdha kosha*) explains word meaning of *Medhyam*, "*medhyayati iti*" That is one which provides *medha* (intellectual power). In the next line he explains about

Medhyaha, “*medhayaii hitaha*” One which is *hita* to *mastishka* or which improves the easy manipulations of *mastishka*; one which increases *medha*.. Further gives some examples like *rakta vacha*, *vyotishmati*, *ketatki*, *shankhapushpi*, *brahmi*, *shweta vacha*, *mandookaparni* etc. Coming to *Rasayana* which is divided into *Rasa (dhatu)* + *Ayana* (movement/*marga*) through which *Poshana*/nutrients reaches to all the *saptadhatu* including *oja*. Further in *shabda kalpa druma* explaining about *laxanas* of *Rasayana*; one which does *vyadhi vidhamsa* (destroys any disease), which acts as *vayasthapaka*, *chakshushya*, *bruhmana*, *vrushya*. When we combine these two words it becomes a wider aspect. *Medhya Rasayana* is a self explanatory concept in broad way.

Understanding of different cognitive and behavioral aspects according to Ayurveda: *Medhya* comprises of all the three mental faculties- *Dhee*, *Dhriti* and *Smriti* and these are interrelated with each other. “*Dharana shkti yuktaha dhihi*” (*amarakosh*) the tool by which one can hold the knowledge is called *dhi* or *budhi*. It is also called as *medha* according to *shabdha kalpa druma*, “*dharana shkti yuktaha dhirmedha*”. *Dhi* or *Buddhi* are synonymous to *Prajna* and *Mahat*, and is an *Atmaguna*. It persists beyond the *Mana*-level. Like *Mana*, the seat of *Buddhi* is also described as *Hridaya*. The function of *Buddhi* is decision-making or determination of what *Manas* places before it either *Arthas* or knowledge perceived through *Indriya*. *Dhriti* is retention of that knowledge which is perceived by *dhi* or *budhi*/ it’s a *nischayatmaka jnyana*. *Dhriti* is the power of will, which controls *Manas* from the various *vikaras* or temptation of the harmful objects. *Smriti* is nothing but the act of remembrance and it’s beyond

that. *Anubhutam priyadinam arthaanaam chintanaam smriti* | (*shabdhakalpa druma*). The recollection of the past is called as *Smriti*. *Smriti* is of three types as *drushta*, *shruta* and *anubhuta smarana*. In these faculties our *prakruta dosha* perform specific functions like, *udana vayu* is responsible for *vak pravrutti*, *prayatna*, *urja* (enthusiasm), *smriti*. So if there is proper functioning of *udana vayu* then these functions are not hampered and if hampered causes different *laxanas* or *vyadhi* (*ardita*, *apasmara*, *smriti nasha*). In Such cases *Medhya Rasayana* can be successfully done. In border sense *Medhya* would be *Grahana shakti* (Power of Grasping), *Dharana shakti* (Power of Retention), *Viveka shakti/ nischayatmaka Budhi* (power of discrimination), last but not the Least *Smriti* (Power Of Recollection), and one which increases and maintains all these factors are *Medhya Rasayana*. Neurological and psychiatric disorders are generally associated with loss of memory (dementia, Parkinsonism), cognitive deficits (schizophrenia), impaired mental function, obsessive compulsive symptoms (depression), and such cases can be corrected through *Medhya Rasayana*.

Medhya Rasayana:

- In *Charaka Samhita* there is detailed narration of *Rasayana*, its method and classification. Acharya *Charaka* has mentioned four *medhya* drugs *Mandookaparni*, *Yashtimadhu*, *Guduchi* and *shankapushpi* as *Medhya Rasayanas*.³
- In *Sushruta Samhita* exhaustive information about *Medhya Rasayana* is available in a separate chapter in *chikitsa sthana*, named : *Medhayushkameeya Adhyaya* (*su.chi28chapter*)⁴. In this chapter detailed description about the method of administration, dosage and duration of different *Medhya Rasayanas* are available.

In the same chapter he has also described about *Medhakara gana*.

- In Ashtanga Sangraha and *Hrudaya*, there is a mention of *medhya dravyas* along with the duration of their use.⁵

- A Separate chapter, named as —*Rasayana vijnana* is explained by yogaratnakara⁶

General assumptions on which Medhya Rasayana works:

- Generalised *guna* of a *medhya* would be: *snigdha mrudu, guru, na ati rooksha*

- *Karya* would be: *sroto shodhana, medhya, tarpana, bruhmana, preerana, mastishkya.*

- *Rasa*: mainly *tikta rasa, madhura rasa, kashaya rasa*⁷

- *Prabhava Janya medha vrudhi karya*, many *dravya* are *medhya* by the virtue of their *prabhava*.

*Medhya Rasayana*⁸ consists of 4 set of drugs which are given in different forms. Mode of administration remains the same that is through oral route. The 4 drugs and in their forms of administration are in order as:-

1. *Mandooka Parni* (*Centella asiatica, Umbiliferia* family) in the form of *swarasa* which is *smruti vardhaka, mastishka dourbalya hara*, and can be used in *unmada, apasmara, atatwabhinivesha vikaras*. *Centella asiatica* inhibits the memory impairment induced by scopolamine through the inhibition of AChE.⁹ BR-16A (Mentat), a formulation containing *Centella asiatica* proved for its antistress effects¹⁰.

2. *Yashtimadhu* (*Glycyrrhiza glabra, Papilionatae* family) in the form of *ksheera paka budhi vardhaka, nadibala prada, medhya*. Fine powder of dried root

is used internally with milk for therapeutic purpose as *Medhya*.¹¹

3. *Guduchi* (*Tinospora cardifolia, Menispermaceae* family) in the form of *swarasa prabhava*: rejuvenates the nervous system enhances intelligence, and research says it improves the injured brain cells. Juice of whole plant is used therapeutically as *Medhya*.² It is also used in the form of decoction, powder and *Satwa* (starch extract of stem). Its root is known for its anti stress, anti-leprotic and anti-malarial activities.¹²

4. *Shankhapushpi* (*Convolvulus pluricalis, Convolvulaceae* family) in the form of *kalka nadi bala vardhaka, mastishka shamaka, nidra janaka. Shankhapushpi* compound containing *Shankhapushpi, Sarpagandha, and Gokshura* in equal quantities studied to be effective in *Chittodvega* (anxiety disorders).¹³

When we observe the way these *kashtoushadhis* are explained, they are given in different forms and that makes them unique. For example if *Mandukaparni* is given in the form of *swara*, while preparing *swarasa* due to *kutana* (ponding) the leaves are converted into *kalka* and then squeezed and in this state all active principles of the drug are liberated out. We can take another example such as *Lashuna*. When it is chewed raw active principle named Acillin is liberated out and it's the main component as it reduces cholesterol in blood. In the same way when *Yashtimadhu* is boiled into *ksheera* the active principles are liberated out during the boiling process and it becomes an excellent *Medhya Rasayana*. But if the same *Yashtimadhu* given in the form of *choorna* its best *kapha nissaraka*. So only *Rasashastra* and *Bhaishajya Kalpana* was formulated because Acharyas

knew that every drug has its own way of preparation and potency increases by giving *samskara*. Apart from these we many *Ekamooliya dravyas* which have certainly marked effects on *Mastishka*.

Interpretations and probable mode of action: *Medhya Rasayanas* strengthen the body and maintain normal body function. *Pitta Dosha* maintains the intelligence and *Kapha* sustains the body with intelligence and *Dhriti* (courage) by its *Sthira Guna*. *Pranavata* performs the intellectual function and it is the main factor involved in grasping and fast recall, especially because of its *Chala* (mobile) and *Vishada* (fast-spreading) properties. *Sadhaka Pitta* performs functions like discrimination between right and wrong by the *Nishchayatmaka Buddhi* and *Medha* (intelligence).¹⁴

Relation between *Tridoshas* and *Medha*: *Vata*: we know that *vata* is responsible for *chala guna* and we can say that the *nadi samsthana* works mainly because of *vata* because. Among pancha vata *Prana vayu* is responsible for controlling the functions of *Buddhi* and *Mana*, while *udana vayu* helps in recalling the past experiences; *Pitta*: Function of *Pitta* is to promote *medha* but *sadhaka pitta* is mainly responsible for good *medha*, *Buddhi*, *abhimana*, *dhairya*; *Kapha*: *Tarpaka* and *avalambaka kapha* in their normal state confer the knowledge and intelligence. *Tarpaka kapha* mainly attends the *poshana karma bhaga*, does *poshana* of *mastishka*, *masthulunga majja* inturn increasing the *dhi dhriti* and *smruti*. *Kapha* is also responsible improving qualities of *dharana*. Relation between *rasa*, *virya*, *vipaka* and *Medha*: *Shita Virya* and *Madhura Vipaka*- it promotes *kapha* and enhances “*Dharana Karma*” and does *Poshana* of *Mastishka* and *nadisamsthana*

(i.e. capacity to retain) e.g., *Yastimadhu*, *Bramhi*, *Sankhpushpi* etc. *Sheetavirya* drugs act by increasing nourishment to the neuronal matter of brain Via *Tarpaka & Avalambaka kapha* and by this action it improves *dharana*(retention). *Ushna Virya* and *Tikta Rasa*- it promotes *pitta* and enhances *Grahana* and *Smarana* (i.e. grasping power and Memory) and acts as *sroto shodhaka mastishka uttejaka*. e.g., *Guduchi*, *Vacha*, *Jyotishmati* etc. *Ushnavirya* drugs act by stimulating *Pachaka, sadhaka , alochaka pitta &* reduces *avarana* of *satva & raja* by *Tamas &* does *Srotoshodhana* action at the level of *Manovaha & Rasovahasrotas*. These explanations form the mode of action of *Medhya Rasayana* according to Ayurveda.

Intrepreting Modern concepts in the light of Ayurveda: When we come to modern explanations we have the concept of Neurotransmitters which are associated with higher mental functions such as memory, learning, emotions like; happiness, sadness, anger, depression etc. Apart from these we have explanation of Limbic system affecting our emotional status. Mainly neurotransmitters related to memory are Serotonin and Glutamate. Deficiency of any of these neurotransmitters leads to impairment of memory, gradual depletion of memory, forgetfulness etc. to enhance these functions there should be enough release of neurotransmitters which increase the encoding, storage and retrieval of memory. Each of these neurotransmitters consists of precursors through which they are synthesized. Depletion of these also can lead to reduced production of neurotransmitters. These precursors can be procured by dietary products. Here we also come across the importance of GUT BRAIN AXIS¹⁵ which directly gives us a

clear idea how these dietary products are converted to neurotransmitters. Gut – brain axis is the biochemical pathway/ signaling that takes place between the gastro intestinal tract and central nervous system. Gut flora is the complex community of the microorganisms that live in digestive tracts of human. The gut flora can produce a range of neuro active molecules, such as acetylcholine, histamine, melatonin and serotonin¹⁵. These statements are relevant because researches found noticeable improvements in the ability of rats to cope up with stressful activity when diets were supplemented by specific gut microbiota. Changes, reduction of microbiota, or contamination of other harmful microbes in the gut flora results in the cognitive difficulties and psychological conditions like stress, depression¹⁵ etc.

Acharyas have explained that, before administration of any kind of *rasayana* in the body its always necessary to perform *shodhana* in the *rugna*. So he sepecifically mentioned *Haritakyadi yoga* for *koshta shudhi*. Here *koshta shudhi* can be taken as clearing of *aama* (unwanted harmful microbes) from the gut flora and setting it ready to assimilate different *rasayanas* administered orally in the presence of helpful microbiota for the easy conversion of active principles into many chemicals which support the entire functioning of nervous system (inclusive of motor, sensory and cognitive functions) Coming to the main aspect each of *Medhya Rasayana* mentioned, they have some important chemical constituents in them like *guduchi* with *glycyrrhizin*, *shnkhapushpi* with *shankhapushpi*, some few alkaloids, proteins, tannins, and saponins which may contain precursors of required neurotransmitters ultimately enhancing their production. When the

medhya rasayana are ingested inside with its active principles the precursors come in contact with gut neurons and enterochromaffin cells and intestinal microbiota which metabolize the active principles finally forming the required neurotransmitter thus increasing its availability. When once the availability of a neurotransmitter increases all the functional aspects of brain are back to pavilion and enhanced. Or the chemical constituents are directly transported in the form of proteins crossing Blood Brain Barrier for central neurotransmitter synthesis. This may be the probable mode of action of *Medhya Dravyas* according to modern.

Apart from enhancing the availability of neurotransmitters research also explains that the above said 4 *medhya rasayana* have neuro protective activity, increase circulation to the brain, anti stress, intellect promoting, memory formation etc. *Medhya* drugs act at different levels such as: at level of *Rasa*, acting by stimulating and improving the function of *Agni*, improving circulation of *Rasa* by opening and cleaning the micro channel and thus improving *Medhya* function.

Ghruta and lipids:

The *Shiras* contains *mastishka* or *mastulunga* and it is *snigdha* in nature. *Mastulunga majja* is considered as *medadharakala* by *ashangasangrahakara*. The *mastulunga* resembles partly melted ghee. Therefore the qualities of *mastishka* should be *snigdha*, *slakshna*, *guru*, *mridu*, *picchila*, *Sandra* etc., similar to those of *snigdha dravya* so in case *medhya dravya samskarita ghruta* can be administered in the patient which can easily pass through BBB (Blood Brain Barrier).

Ghruta is considered *sarva shreshtha* in all the *sneha*. It does *sahasra karma* and is of

sahasra veerya. Rasa, vipaka of ghruta being madhura, guna being snigdha, sheeta virya. It does these works: mastulunga poshaka, preenana, smritibudhi vardhaka, agni vardhaka, ojavardhaka, kapha medha vardhaka, medha shakti vardhaka, bala vardhaka, shukra janana, netrya, good for balaka and vrudha, Santana janaka, kantidayaka, soukumarya.

It's said "samskarasyanuvartanat" i.e with which ever medicine the *ghruta* is *samskarita*, it depicts the *guna* of that *dravya*.

The brain and CSF are separated from the blood by Blood Brain Barrier, which regulates the movement of substances into and out of the nervous system. And only lipid soluble substances, oxygen, carbon dioxide, glucose can pass through it. The lipophilic action of ghee facilitates the transportation of its content to the brain and nervous system through BBB which also has lipophilic molecular structure. This makes lipid and lipid soluble drugs pass easily through BBB. So the drugs which are in the form of *Ghruta* which are lipids are rapidly absorbed in the target areas of central nervous system. *Ghruta* also acts as an anti oxidant which repairs the degenerative brain cells. It also acts in normalizing the chemical changes in brain by balancing the neurotransmitters.

There are many *Medhya ghruta* explained by our Acharaya and also *murdhni taila* which are *mastishkya, uttejaka* and *vata shamaka. Kalyanaka ghruta, Panchagavya ghruta, Brahmi ghruta, Jyotishmati taila, Lashunadya ghruta, hingwadi ghruta* etc which do the *samprabodhana* of *hrudaya* and *mana* but also are explained as *medhya*. Apart from this when *tail* and *ghruta yogas* are unavailable then *rasoushadhis* can also be made *prayoga*. *Swarna kalpas* are the best *medhya* which are *vrishya, balya,*

brimhana, rasayana, mati smriti prada, ayushkara, netrya. The best example is *swarna bindu* and *swarna vachadi yoga*. Other *yogas* like *swarnavasanta malati, swarna bhupati rasa, bruhatvata chintamani rasa, brahmi vati swarna* etc are also *parama medhya* in nature *vata hara, mastikshka shamaka, budhi prada* etc. Apart from these *rajata, loha, shillajita, pravala, mukta, swarnamakshika, kalpas* are also *medya*.

CONCLUSION: *Medhya rasayana* is a beautiful concept. The 4 *medhya* are explained because of their increased efficacy towards forming new neural connections i.e increasing *budhi*. Apart from these we can study many other drugs having the same *medhya* property such as, *Aindri, rasona, gojivha, eranda, Jyotishmati, tila, dadima, palandu, kashmari, priyangu, bilwa phala, nilotpala, Brahmi, shweta bakuchi, bala, agaru, Kushmanda beeja, ela, aakarakarabha, chitraka, Vacha lavanga, keshara, Ashwagandha, Bringaraja, Apamargabeeja* etc. The practice of *rasayana* these days has declined and people have forgot what wonders can *rasayana* work. *Medya rasayana* is not only limited to regulate the higher mental functions but also have pronounced potency in treating many mental disorders and disturbances such as parkinson's, alzheimer's, depression secondary to any disease, epilepsy, amnesia, bipolar disorder, insomnia, obsessive compulsive disorder and so on. *Medhya rasayana* is not limited only to the 4 *medhyas* explained in classics but is a broader concept and allows *vaidya* to apply his *yukti* and use different forms of medicines as *ghruta kalpanas, swarna kalpana, choorna, arishta kalpanas* etc. *Medhya basti* is also in practice now a

days and is intervened in the patient and can be debated keeping the *doshik sidhantas* & entric nervous system / gut-brain axis in mind .

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Corresponding Author:

Dr.Kulkarni Oorvi, PG Scholar, Ayurveda Mahavidyalaya Hubli, Heggeri.

Email:dr.oorvikulkarni@gmail.com

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