



## REVIEW ARTICLE ON THE ROLE OF AYURVEDA IN ENHANCING THE INTELLECTUAL POWER

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### ABSTRACT

In present generation, especially students are known to be associated with considerable burden of studies which causes depression and failure in exams leads them for suicides, otherwise poor quality of life. Therefore, they want to improve their intellectual power. It has become a major student health problem today. *Ayurveda* is an ancient system of traditional medicine prevalent in India. The '*Medhya Rasayanas*' in *Ayurveda Samhitas* are known to be beneficial to improve the intellectual power e.g., *Mandukparni Swaras*, *Yashtimadhu Churna* with *Ksheer*, *Guduchi Swaras*, and *Shankhapushpi Kalka*. These drugs are used for all the age groups but it is most effective for enhancing the memory of infants. These drugs promote the Intellect (*Dhi*), Retention power (*Dhriti*), memory (*Smriti*). Unfortunately modern medicine based drugs have limited success in enhancing the intellectual power. This review discusses about Role of *Ayurvedic Medhya Rasayanas* as a great player for enhancing the intellectual power or memory.

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### INTRODUCTION

*Ayurveda* provides a safe and lasting impact on child's mental health, reducing stress and improving performance. Psychological health or a healthy state of mind depends on the sense organs and their functions like awareness, sharpness, focus and attention which leads to good memory and decisiveness [1].

According to *Ayurveda*, there could be many causes for poor memory and IQ, the primary ones being malnutrition and chemical imbalances in the brain functions. *Ayurveda* explains that the *Kapha Dosha* of the body is responsible for memory problems as vitiated *Kapha Dosha* leads to a dull mind or disinterestedness. Similarly, vitiated *Vata Dosha* also leads to stress and confusion, leading to the obstruction of knowledge and memory. *Vata Dosha* is responsible for all nervous functions and memory. So, in order to improve your memory, both *Vata* and *Kapha Dosha* should be balanced. A combination of *Vata* and *Kapha* improves the memory. *Pitta Dosha* (fire element) plays a major role in improving sharpness and IQ [2]. In *Charaka Samhita*, it has been stated that *Buddhi*, *Mati*, *Medha*, *Prajna* and *Jnana* have the same meaning. The word *Buddhi* has originated from the Sanskrit word "*Budh Grahane*". Applying suffix '*Ktin*' to *Buddh Dhatu*, the word has been derived. It can be defined as a phenomenon by which

knowledge is gained '*Budhyate Anenalti Buddhi*'. *Chakrapani* has given the definition of *Buddhi* as - The word *Avasthanam* meaning centralization of the knowledge after grasping, *Sthiramativam* means retaining the knowledge for longer period and *Abibhramena* is the final stage of *Buddhi*, when no more doubts and confusions arise and the fact is crystal clear [3].

#### Types of Buddhi

In *Charaka Samhita* word *Prajna* has been used which is synonymous to *Buddhi*. *Prajna* has been described to be of three types *Dhi*, *Dhriti* and *Smriti*.

**Dhi(Intellect)-** The term *Dhi* is derived from "*Dhyayate Samprasaranam Cha*" by applying '*Quip*' and making *Dirgha* by applying *Sutra 'Hal'*. *Charaka* has stated "*Samam Buddhihi Pashyati*" i.e. this way he has tried to identify *Dhi* through its specific function [4]. On this *Chakrapani* comments that knowledge of an object is the sense of "as it is" i.e. "*Yatharthanubhava*" or perception of true knowledge is *Dhi*.

**Dhriti(Retention power)-** The word *Dhriti* is derived from the Sanskrit word "*Dhriyan Dharne*" by applying '*Ktin*' suffix. *Dhriti* act as the controlling factor which prevents the *Manas* from indulging in harmful and non-beneficial objects, that's

why the importance of association of *Dhriti* with *Manas* has been focused under the function of *Manas* in the context of 'Swanigraha'<sup>[5]</sup>.

**Smrti (Power of recollection)**-The word *Smrti* is derived from the Sanskrit word 'Smri Adhyane' by suffixing 'Ktin'. It can be examined by recollection of an object in *Manas* i.e. 'Smrti Smaranena'<sup>[6]</sup>. In *Charaka Sharira*, it is defined as 'Smarnam Smrti Uchyate' which means subjects ability to recall things. In *Charaka* it has been accepted as one type of *Prajna* or *Buddhi*.

**Medha** -The word *Medha* is derived from the Sanskrit root 'Medhri Sangame' i.e. to meet or to come together or harmonize. According to *Amarakosha*, 'Medhyate Sangachhate SarvamIti' i.e. to have proper co-relation and understanding about the knowledge of the existing objects. Without *Medha*, knowledge cannot be understood. According to *Chakrapani*, "Dharanvati Dhi Medha" which means it is a type of *Dhi* having the power of retention of knowledge. By discussing various factors of *Buddhi*, it can be concluded that *Medha* is a type of *Buddhi* similar to *Dhi*. 'Dhi Dharanvati Medha' explains that *Medha* is a type of *Dhi*, which is responsible for retaining the knowledge.

#### Ayurvedic Approach to Enhancing the Memory

##### Medhya Rasayanas

The word 'Medhya Rasayanas', have been derived from the Sanskrit words 'Medhya', meaning intellect, and 'Rasayana', meaning rejuvenation. These herbs acting on the brain so called as Nootropic herbs (Nootropic is derived from Greek and means acting on the mind) and their isolated constituents referred to as smart drugs<sup>[7]</sup>. The medicinal plants in the *Ayurvedic* system are classed as brain tonics or rejuvenators. Earlier reports indicate that pharmaceutical drugs has lack of such benefits which are offered by *Medhya Rasayanas* plants<sup>[8]</sup>.

*Medhya Rasayana* is mainly a group of 4 medicinal plants that can be used singly or in combinations<sup>[9]</sup>:

1. *Mandukaparni* (*Centella asiatica* Linn.)- brain growth promoter, inhibits the memory impairment<sup>[10]</sup>.
2. *Yastimadhu* (*Glycyrhiza glabra* Linn.)- It increases the circulation into the CNS system, improves learning and memory<sup>[11]</sup>.
3. *Guduchi* (*Tinosporacor difolia* (Wild) Miers) - possess learning and memory enhancing, antioxidant, and anti-stress action, enhances the cognition in normal and cognition deficits animals in behavioural test. It is useful for improving mental deficit and IQ levels<sup>[12]</sup>.
4. *Shankhapushpi* (*Convolvulus pluricaulis* Choisy)<sup>[13]</sup>.

In *Kashyapa Samhita* so many single drugs and also compound drugs (*Yog*) has been given for *Lehana Karma* which are very useful as memory boosters which are<sup>[14]</sup>

1. *Brahmi*, *Mandukaparni*, *Triphala*, *Chitraka*, *Vacha*, *Satapushpa*, *Satavari*, *Danti*, *Nagbala*, *Nishotha* should be used separately mixed with *Madhu* and *Ghrita*. This *Yogis* especially used to promote intellect and boost up the memory of children.
2. *Manjistha*, *Triphala*, *Brahmi*, *Bala*, *Atibala*, *Chitraka* should be used in the form of powder in an equal quantity mixed with *Madhu* and *Ghrita* is used for *Medha Vriddhi*.
3. *Ghrita* medicated with *Kustha*, *Sarshapa*, *Pippali*, *Triphala*, *Vacha* and *Saindhava* is 'Medha Jannanam Uttamam' i.e.best effective recipe for renovating the intelligence.
4. *Samvardhan Ghrita*.
5. *Brahmi Swarasa*.

#### Action of memory enhancing herbs

The formulation of *Medhya Rasayana* drugs generally are of two types<sup>[13]</sup>:-

1. *Shita Virya* and *Madhura Vipaka*- it promotes *Kapha* and enhances "Dharana Karma" (i.e., retention of cognition) e.g., *Yastimadhu*, *Brahmi*, *Sankhapushpi* etc.
2. *Ushna Virya* and *Tikta Rasa*- it promotes *Pitta* and enhances *Grahana* and *Smarana* (i.e., grasping power and Memory) e.g., *Guduchi*, *Vacha*, *Jyotishmati* etc.

#### Medhya drugs act at different levels<sup>[15]</sup> –

1. At level of *Rasa*
2. Act by stimulating and improving the function of *Agni*
3. Improve circulation of *Rasa* by opening and cleaning the micro channel and thus improving *Medhya* function.

*Medhya Rasayana* drugs play an essential role in the enhancement of memory and intellectual power. The mode of this therapy involves the individual to attain sedation, calmness, tranquility or a stimulation of activities of brain<sup>[16]</sup>. *Medhya Rasayana* drugs are used for prevention of mental disorders and enhancement of mental powers of all the age groups. These drugs promote the Intellect (*Dhi*) Retention power (*Dhriti*), memory (*Smriti*). In fact they produce Neuronutrient effect by improving cerebral metabolism. *Medhya Rasayana* 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 "Tamas"<sup>[17]</sup>.

Earlier reports indicate that 'Rasayan drugs' could be used in stem cell therapy<sup>[18]</sup>. *Rasayana* concept of *Ayurveda* has been correlated with tissue regeneration and cell renewal and specific *Rasayana* is known to stimulate and nourish respective *Dhatus* or tissues.

S No	MedhyaRasayana drugs	Mode of action
1.	<i>Mandukaparni</i> ( <i>Centella asiatica</i> )	Oxidative defense <sup>[19]</sup> , Treating mental retardation <sup>[21]</sup> , enhance neuronal dendrites <sup>[22]</sup>
2.	<i>Yastimadhu</i> ( <i>Glycyrhiza glabra</i> Linn.)	Memory-strengthening <sup>[23]</sup> , Cognitive (enhances learning and memory) <sup>[24]</sup>
3.	<i>Guduchi</i> ( <i>Tinospora cordifolia</i> )	Antioxidant <sup>[25]</sup> Anxiolytic <sup>[26]</sup>
4.	<i>Sankhapushpi</i> ( <i>Convolvulus pluricaulis</i> )	Memory invigorator <sup>[27]</sup> , Acetylcholinesterase Inhibitor <sup>[28]</sup>
5.	<i>Brahmi</i> ( <i>Bacopa monnieri</i> Linn)	Prevent oxidative damage of brain <sup>[29]</sup> , Memory enhancement <sup>[30]</sup>
6.	<i>Jyotishmati</i> ( <i>Celastrus paniculatus</i> )	Cognitive <sup>[31]</sup> , enhances recall of memory <sup>[32]</sup>
7.	<i>Kushmanda</i> Ghrita( <i>Benincasa hispida</i> )	Increase immediate memory, Antidepressant <sup>[33]</sup>
8.	<i>Ashwagandha</i> ( <i>Withania somnifera</i> )	Neuritic regeneration <sup>[34]</sup> , Mood stabilizer Anxiolytic – antidepressant activity <sup>[35]</sup>
9.	<i>Vidanga</i> ( <i>Embelia ribes</i> )	Neuroprotective effect , Antioxidant <sup>[36]</sup>

For example, *Medhya Rasayana* for the brain, *Hridya Rasayana* for the heart, *Twachy Rasayana* for the skin, and *Chakshusya Rasayana* for the eyes. Role of 'Medhya drugs' in neuronal stem cells differentiation is also described earlier<sup>[19]</sup>. *Ayurveda* have been described to provide a list of herbs known for nootropic activity having multi-dimensional utility in various conditions<sup>[20]</sup>. *Medhya Rasayana* drugs and its mode of action is described in following Table No. 1:-

### Role of Swarna Prashana as a memory booster

*Acharya Kashyapa* explained the method which should be followed by the *Lehana*. In this regard he explains the method of doing the *Swarna Prashana*. Patient should sit and see the *Poorva Disha*, take *Swarana* and rub it against the hard surface like stone with water and then mix with *Madhu* and *Grita* and given for licking. This is called as *Swarna Prashana* and this will going to increase the Lifespan and memory of child. If this is taken for one month continuously child becomes *Parama Medavi* and when taken for six month it will make the child *Shruthadhra* (able to retain once heard matter). *Swarna Prashana* has many more beneficial effects on children such as enhancing immunity etc. But the special stress has been given to *Medhya Rasayana* effects like *Medhavi* and *Shrutadara* by *Acharya Kashyapa*. *Acharya Kashyap* has mentioned the benefits of *Swarna Prashan* by stating that it promote intellect, health, complexion and strength (*Bala*)<sup>[37]</sup>.

### CONCLUSION

It is very unfortunate that in spite of advancements in modern medicine today its success is very limited in context with the enhancement of intellectual power and memory of human beings. One of the most interesting aspects of the brain is its power to retain memory, but memory can become faulty due to several reasons such as genetic, congenital, malnourishment etc. In present time all around the world mostly children and old age peoples are affected or very much troubled due to memory loss. But especially students are stressed during exams because they are not able to make full use of their memory potentials. So *Medhya Rasayana* of *Ayurveda* help to better improve the memory of today's generation. Researches were done on improvement of memory and there are findings that *Medhya* herbs were used as memory boosters. Therefore, the concept of *Medhya Rasayana* of *Ayurveda* is very successful in enhancing the intellectual power. Hence, the need to explore the *Ayurvedic* medicinal plants globally for improving memory and IQ of children. This article has discussed about how the *Ayurvedic Medhya Rasayanas* [nootropic herbs] are commonly used as memory booster and their biochemical actions in aiding memory improvement.

### References

1. R. Sahelian. Mind boosters: a guide to natural supplements that enhance your mind, memory, and mood, (St. Martin's Press, New York, 2000) pp. 43-52.
2. <https://www.linkedin.com/pulse/ayurvedaimprovingmemoryiqchildrendrgowthamankrishnamoorthy>.
3. Laxmidhar dwivwdi (Part 2) Charaka Samhita: Chakrapani commentary; VimanaSthana; TrividhrogvisheshvijaniyaAdhyaya; Chapter 4 verse 08 ChaukhambaKrishnadas academy, Varanasi; reprint :2008 p. 821.
4. Shri Satya Narayan Shastri (Part 1) CharakSamhita with elaborated Vidhyotini Hindi commentary SharirSthan; KatidhapurushiyashariraAdhyaya; chapter 1 verse 99; Varanasi ChukhambhaBhartya academy 2008. P 824.
5. Shri Satya Narayan Shastri (Part 1) CharakSamhita with elaborated Vidhyotini Hindi commentary SharirSthanKatidhapurushiyashariraAdhyaya; chapter 1 verse 100; Varanasi ChukhambhaBhartya academy 2008. P 824.
6. Shri Satya Narayan Shastri (Part 1) CharakSamhita with elaborated Vidhyotini Hindi commentary VimanSthanTrividhrogvisheshvijaniyaAdhyaya; chapter 4 verse 08; Varanasi ChukhambhaBhartya academy 2008. p. 707.
7. S. Dentali. *Natural Treatments to Improve Memory*, (Prima Publishing, Roseville, 2000) pp. 94-95.
8. Kumar V (2006) Potential medicinal plants for CNS disorders: an overview. *Phytother Res* 20: 1023-1035.]
9. Kulkarni R, Girish KJ, Kumar A (2012) Nootropic herbs (MedhyaRasayana) in Ayurveda: An update. *Pharmacogn Rev* 6: 147-153.
10. Dravyaguna – Vijnana Vol.2 [Vegetable drugs] Prof. P.V. Sharma ;chapter 1[MedhyadiVarga] ChukhambhaBhartyaacademy,Varanasi 2013. p.4.
11. Dravyaguna – Vijnana Vol.2 [Vegetable drugs] Prof. P.V. Sharma ;chapter 1[MedhyadiVarga] ChukhambhaBhartyaacademy,Varanasi2013. p.253- 256.
12. Upadhyay AK, Kumar K, Kumar A, Mishra HS (2010) *Tinosporacordifolia* (Willd.) Hook. f. and Thoms. (Guduchi)–validation of the Ayurvedic pharmacology through experimental and clinical studies. *International Journal of Ayurveda Research* 1: 112-121.
13. Dravyaguna – Vijnana Vol.2 [Vegetable drugs] Prof. P.V. Sharma ;chapter 1[MedhyadiVarga] ChukhambhaBhartyaacademy,varanasi 2013. p 3-14.
14. *KasyapaSamhitaby VrddhaJivakarevised by Vatsya; Sanskrit introduction by Nepal RajaguruPanditHemaraaja Sharma; VidyotiniHindi commentary ChaukhambhaSanskritsansthanVaransi; Edition reprint 2012;SutrasthanaLehadhyaya; p. 5 - 8.*
15. Singh AK, Gupta AK, Manish Singh PK (2014) Rasayana therapy: A magic contribution of Ayurveda for healthy long life. *Int J Res Ayurveda Pharm* 5: 41-47.
16. ChaudhariK, Murthy ARV (2014) Effect of Rasayana on mental health-a review study. *International Journal of Ayurveda and Alternative medicine* 2: 1-7.
17. Tiwari R, Tripathi JS, Gupta S, Reddy KRC (2011) Pharmaceutical and clinical studies on compound Ayurvedic formulation, SaraswataChurna. *International Research Journal of Pharmacy* 2: 77-84.
18. Patil RB, Gayal RR (2014) Rasayana A Multidimensional Therapy: A Review. *International Ayurvedic Medical Journal* 2: 433-439.
19. Prakash A, Kumar A (2013) Mitoprotective effect of *Centellaasiatica* against aluminum-induced neurotoxicity in rats: possible relevance to its anti-oxidant and anti-apoptosis mechanism. *NeurolSci* 34: 1403-1409.
20. Kulkarni R, Girish KJ, Kumar A (2012) Nootropic herbs (MedhyaRasayana) in Ayurveda: An update. *Pharmacogn Rev* 6: 147-153.
21. Ven Murthy MR, Ranjekar PK, Ramassamy C, Deshpande M (2010) Scientific basis for the use of Indian ayurvedic medicinal plants in the treatment of

- neurodegenerative disorders: Ashwagandha. *Cent Nerv Syst Agents Med Chem* 10: 238-246.
22. Gadahad MR, Rao M, Rao G (2008) Enhancement of hippocampal CA3 neuronal dendritic arborization by *Centella asiatica* (Linn) fresh leaf extract treatment in adult rats. *J Chin Med Assoc* 71: 6-13.
  23. Parle M, Dhingra D, Kulkarni SK (2004) Memory-strengthening activity of *Glycyrrhizaglabra* in exteroceptive and interoceptive behavioral models. *J Med Food* 7: 462-466.
  24. Joshi KS, Bhonde R (2014) Insights from Ayurveda for translational stem cell research. *J Ayurveda Integr Med* 5: 4-10.
  25. Rawal AK, Muddeshwar MG, Biswas SK (2004) *Rubiocordifolia*, *Fagoniacreticalinn* and *Tinosporacordifolia* exert neuroprotection by modulating the antioxidant system in rat hippocampal slices subjected to oxygen glucose deprivation. *BMC Complement Altern Med* 4: 11.
  26. Kulatunga RD, Dave AR, Baghel MS (2012) Clinical efficacy of *GuduchyadiMedhyaRasayana* on Senile Memory Impairment. *Ayu* 33: 202-208.
  27. Sethiya NK, Nahata A, Mishra SH, Dixit VK (2009) An update on *Shankhpushpi*, a cognition-boosting Ayurvedic medicine. *Zhong Xi Yi Jie He Xue Bao* 7: 1001-1022.
  28. Nag G, De B (2008) Antioxidant and Acetylcholinesterase Inhibitory Properties of the Indian Medicinal Plant "*Shankhpushpi*" Used for Enhancing Memory Function. *Journal of Complementary and Integrative Medicine* 5: 1553-3840.
  29. Saraf MK, Prabhakar S, Khanduja KL, Anand A (2011) *Bacopamonniera* Attenuates Scopolamine-Induced Impairment of Spatial Memory in Mice. *Evid Based Complement Alternat Med* 2011: 236186.
  30. Stough C, Lloyd J, Clarke J, Downey LA, Hutchison CW, et al. (2001) The chronic effects of an extract of *Bacopamonniera* (Brahmi) on cognitive function in healthy human subjects. *Psychopharmacology (Berl)* 156: 481-484.
  31. Lekha G, Kumar BP, Rao SN, Arockiasamy I, Mohan K (2010) Cognitive enhancement and Neuroprotective effect of *Celastrus paniculatus* Willd. seed oil (*Jyothismati* oil) on male Wistar rats. *Journal of Pharmaceutical Science and Technology* 2: 130-138.
  32. Singh N (2006) Effect of *Celastrus paniculatus* on Learning, Memory and Serum biochemistry of Aging Albino Rats. *Indian Journal of Gerontology* 20: 310-316.
  33. Chandre R, Upadhyay BN, Murthy KH (2011) Clinical evaluation of *Kushmanda Ghrita* in the management of depressive illness. *Ayu* 32: 230-233.
  34. Kuboyama T, Tohda C, Komatsu K (2005) Neuritic regeneration and synaptic reconstruction induced by withanolide A. *Br J Pharmacol* 144: 961-971.
  35. Bhattacharya SK, Bhattacharya A, Sairam K, Ghoshal S (2000) Anxiolytic-antidepressant activity of *Withaniasomniferaglycowithanolides*: an experimental study. *Phytomedicine* 7: 463-469.
  36. Ansari MN, Bhandari U, Islam F, Tripathi CD (2008) Evaluation of antioxidant and neuroprotective effect of ethanolic extract of *EmbeliaribesBurm* in focal cerebral ischemia/reperfusion induced oxidative stress in rats. *Fundamental & Clinical Pharmacology* 22: 305-314.
  37. *Kasyapa Samhitaby Vrddha Jivakarevised by Vatsya; Sanskrit introduction by Nepal Rajaguru Pandit Hemaraja Sharma; Vidyotini Hindi commentary Chaukhambha Sanskrit Sansthan Varansi; Edition reprint 2012; Sutrasthana Lehadhyaya; p. 5.*

