NEURO – PHARMACOLOGICAL REVIEW ON FOUR *MEDHYA DRAVYAS* DESCRIBED BY *CHARAKA*

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ABSTRACT

Ayurveda has a novel concept of *rasayanas* i.e the drugs that rejuvenate the body functions up to the molecular level. The concept of *rasayana* is not just revitalizing of tissues as *Acharyas* have classified them according to their peculiar actions on specific systems. *Acharya Charaka* has given a vivid explanation on four *medhya rasayanas* viz. *Shankapushpi kalka*, *swarasa* of *Mandookaparni*, *Yashtimadhu* along with milk and *Guduchi kwath*. In order to know the motto behind selection of these four drugs in their respective *kashaya kalpnas* as stated, we need to know their neuro pharmacological actions to elaborate the *medhya karma*. This short review highlights the properties of these *dravyas* in their specific *kalpana*.

Keywords: *Medhya Rasayana* , neuro pharmacology, *Kashaya kalpana*

INTRODUCTION

"drishta shruta anubutaanaam smaranat smriti uchyate||" [1]

Memory is the ability of an individual to record the information and recall it when needed. In *Ayurveda*, all cognitive functions are correlated to *dhi, dhriti, and smriti*. *Dhi* is nothing but *medha*, *buddhi*. Besides this, *Ayurveda* has given a novel concept of *rasayanas* i.e rejuvenating drugs that help in increasing the vitality of the body. *Acharya Charaka* has explained *rasayanas* that not only help in improving brain functions but also have overall rejuvenation of the body. They are known as *medhya rasayanas* which are four in number as follows:

1] *Mandukaparni swarasa*

2] *Yashtimadhu churna* along with *ksheer*a

3] *Shankapushpi kalka*

4] *Guduchi kwatha*

DRUG REVIEW

A brief introduction of the four dravyas: [2]

1] *Mandukaparni:*

Latin name: *Centella asiatica Linn*; Family: Umbelliferae; Synonyms: *saraswati, divya, manduki*; *Gana*: *Charaka – vayasthapana, prajasthapana; Sushruta – tikta skandha* Chemical constituents - Asiatic acid, asiaticoside, carotene, vallerine etc.

2] *Shankhapushpi:*

Latin name: *Convolvulus pluricaulis Chois*; Family: Convolvulaceae; Synonyms: *mangalya kusuma*, *ksheerpushpi*; Chemical constituents: Kaempferol, arecoline, convolvine

3] *Yashtimadhu:*

Latin name: *Glycyrrhiza glabra Linn*; Family: Fabaceae; Synonyms: *Madhuka, klitaka*; *Gana*: *Charaka*: *Jivaniya, Kanthya*; *Sushruta*: *kakolyadi, Sarivadi, Anjanadi*; Vagbhata: *Anjanadi, Sarivadi*; Chemical constituents: glycyrrhizin, liquiritin, glabridin, glycyrrhetic acid.

4] *Guduchi*:

Latin name: Tinospora cordifolia Willd Miers; Family: Menispermaceae; Synonyms: *Amruta, kandaruha, chakrangi, tantrika,* etc. *Gana*: *Charaka – vayasthapana, dahaprashamana, triptighna*; *Sushruta - guduchyadi, patoladi, valli panchmula*; *Vagbhata*: *guduchyadi, aragvadhadi*; Chemical constituents: berberine , tinosporine, beta sitosterol.

DICUSSION

A] Ayurvedic pharmacology of these drugs:

When observed, it's seen that all the four drugs are *madhura vipaki dravyas*. All are of *sheet virya* except *guduchi*. *Medha* is the *karma* given of *prakrit pitta*. This can be related to orientation and grasping power. *Guduchi,* being *madhura vipaki* and *ushna virya* can help in enhancing grasping power as its constitution is ideal for *karma* of *pitta*, especially *sadhaka pitta*. It can stimulate neuronal functions due to *pachana karma*.

The *madhura vipaki* and *sheeta virya dravyas* can help the function of *Tarpaka kapha* to go on smoothly owing to its constitution that is favourable for *kapha karma*. Dhruti i.e *dharana shakti*, memory retention capacity which can occur in presence of only *sheeta virya*. Thus we see that though all the drugs are *medhya*, each exhibits different functions!

B] Need for the elaboration of *medhya karma*:

Now-a-days, a false marketing is in practise regarding the cognitive effects of these *medhya dravyas*. All of these are advertised as brain tonics and energy boosters and are blindly consumed especially in paediatrics. Over cautious parents who want their children to excel are among them. *Medhya dravyas* work at different levels on nervous system. This is an effort to throw light on this neuro pharmacological aspect.

We are persuaded to think why *Acharya Charaka* must have clubbed four of these in a group? They certainly must be beneficial collectively in a common nervous disorder! For this, we need to know their mode of action from modern point of view too. So, let's have a look on the same:

1] *Guduchi*: [3, 4]

The major constituent of *guduchi* is berberine which exhibits a peculiar action. It is isoquinolone alkaloid that has AChE (acetylcholinesterase inhibitory) action; similarly it is MAO – inhibitory. Berberine helps prevent oxidation damage to bio molecules of brain, reduces peptides that interfere with memory function and lowers lipids that hamper cerebral blood flow. Thus, *guduchi* arrests neuro degeneration which is commonly present in Alzheimer's disease. Berberine reduces A beta levels by modulating APP (amyloid precursors) processing in human neuroglioma cells without toxicity. Hence it is *medhya rasayana* used in degenerative disorders.

2] *Yashtimadhu*: [5]

The major constituent useful in brain function is glabridin. Chemically it is a flavonoid polyphenol which is proven to attenuate cerebral injuries in stroke as it is neuroprotective. It is also proved in animal studies that it enhances memory retention. Thus it is useful mainly in Alzheimers disease.

3] *Shankhpushpi*: [6]

Convolvulus pluricaulis species has been studied deeply. The constituent convolvine is responsible for blocking M2 and M4 cholinergic muscuranic receptors. It potentiates effects of arecoline, a muscuranic memory enhancer that ameliorates cognitive defects in Alzheimer's.

4] *Mandukaparni*:[7]

The constituent responsible is asi-aticoside. Centella asiatica possesses this triterpene which is neuro protective and has anti oxidant properties. Thus, it can be said that all of these four dravyas are *medhya* with respect to their beneficence in neuro-degenerative disorders.

Need to take these drugs in their specific *kashaya kalpanas* and *anupana*:

a) *Guduchi*:

Guduchi kwatha is suggested for consumption. The reason behind this is that berberine is fixed only in the stem. So we get a proof as to why this particular *bhaishyajya kalpana* is given in texts be-cause *kwatha kalpana* extracts the most from the stem compared to other *kashaya kalpanas*.

b) *Yashtimadhu*:[8]

Charaka has suggested using *ya-shtimadhu churna* along with milk for *medhya karma*. It is probably because glabridin is an isoflavone that comes in hydrophobic extract of Glycyrrhiza *glabra*. In addition to this, being a phytoestrogen, its estrogen receptor binding function can be enhanced when consumed with milk. Phytoestrogens are known to arrest ageing and are neuroprotective.

c) *Shankhapushpi*:

Charaka has stated to take whole plant for *medhya* effect. The answer to this is convolvine is present in the whole plant. The extract of whole plant is proven to in-crease neuropeptide synthesis in brain pro-tein content and increases acquisition effi-ciency.

d) *Mandukaparni*:[9]

Charaka has mentioned to use it in the form of *swarasa*. In a study, it is proved that, leaf extract showed highest amount of asiaticosides than petioles and roots. *Swarasa* extraction is done mainly from leaves of any plant. Aqueous extract prevents cognitive defects and improves memory retention.

Here a question arises as to why *brahmi* has been excluded from this group? Actually it is a popular herb in cognition dysfunction. *Mandukaparni* pos-sesses brahmoside which is content of *brahmi* (*Bacopa monneiri*). Also it has been said that *mandukaparni* should not be used with other sedative drugs as it can lead to synergism. [10] Hence, this may be the reason why *Brahmi* might have been excluded from the group.

CONCLUSION

It can be concluded that *Chara-kacharya* must have designed this combi-nation particularly in diseases of *Smriti bhramsha*. The *rasa*, *veerya*, *vipaka* of these dravyas are favourable for improving cognition defects. These four *medhya rasayanas* are thus of *Naimittika* [11] type i.e. in specific disorders. So, we also get an idea of *Naimittika medhya rasayana* which exhibit certain organ-specific action re-lated to disease. And after reviewing the neuro pharmacology of the concerned *dravyas*, we can opine that this group of *dravyas* is beneficial in Alzheimer's dis-ease in particular.

Secondly, regarding their use in different *kashaya kalpanas* and *anupana*, we can definitelysay that for enhancement of their pharmaco therapeutic value our *Acharyas* must have stated so. Thus, we get a scientific background for our formu-lations.

REFERENCES

1. Yadavji Trikamji Acharya, Caraka Saṃhitā, Āyurveda Dīpikā Vyakhyā, Chaukhambha Prakashan, Varanasi, Re-print 2011
2. J.L.N. Shastry , Dravyaguṇa Vijñāna Chaukhambha Orientalia , Varanasi ,

Vol II , 3rd Edition, 2008

3. Ren You Gan, 'Bioactivities of berberine – An Update 'International Journal of Modern Biology and Medicine', 2012, 1(1): 48-81

4. Mutalik Madhav, Mutalik Maitreyi, 'Tinospora cordifolia - role in depression, cognition and memory', Australian Journal of Medical Herbalism, Volume 23, issue 4, 2011

5. Yong ming chui et al, 'Effect of glabridin from glycyrrhiza glabra on learning and memory in mice', Planta medica, march 2008; 74(4): 377-80

6. Asthana S et al, 'Clinical pharmacokinetics of arecoline in subjects with Alzheimer's disease, Clinical Pharmacology and Therapeutics, 60 (3): 276-282

7. Kashmira .J. Gohil,'Pharmacological Review on *Centella asiatica*: A Potential Herbal Cure-all', Indian J Pharm Sci. 2010 Sep-Oct; 72(5): 546–556

8. Lixia Zhao, 'Neuroprotective And Neurotrophic Efficacy Of Phytoestrogens In Cultured Hippocampal Neurons', Exp Biol Med Vol. 227(7):509–519, 2002

9. N. A. Zainol et al, 'Profiling of Centella asiatica (L) Urban extract, The Malaysian Journal of Analytical Sciences, Vol 12, No 2 (2008): 322 -327

10. Vd. Mukund Sabnis, Chemistry and Pharmacology of Ayurvedic Medicinal Plants, Chaukhambha Amarbharati Prakashan, Varanasi, 1st Edition, 2006

11. Yadavji Trikamji Acharya, Suśruta Saṃhitā, Niband Saṃgraha, Chaukhambha Sanskrit Sansthan, Varanasi, 2010

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