



Drugs Acting on Pranavaha Srotas with Special Reference to Swasahara Dashemani

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Introduction

Holistic biology of Ayurveda is based on certain biofactors like *Triguna*, *Panchabhuta*, *Tridosha*, *Saptadhatu*, *Oja*, *Agni*, *Ama*, *Srotas* etc. *Srotas* are the inner transport system of the body which provide platform for activities of other important bio-factors like *tridosha*, *saptadhatu*, *ojaagni* etc.¹ Ayurveda has emphasized the role of *srotas* both in the physiological and pathological state. Therefore a thorough knowledge on the concept of *srotas* is essential.

The term *srotas* is derived from the root word “su sravane” meaning to exude, ooze, filter, or to permeate. The word *srotamsi* comprise all channels which are big and small, perceptible and non-perceptible and thus compose the internal transport system of body. It is the pre requisite for the maintenance of health because, without healthy *srotas* body cannot grow normally. *Dosha-dushyasammurchana* happens only during the *srotovaishamyastate* and it is the main phenomenon in the development of disease. The integrity of *srotas* is challenged by wide range of morbid factors. The principal *karana* for *srotodushti* are *mandagni* and *ama*.

In some studies, *srotas* have been related to blood capillaries², nervous system³, *anusrotas* to cell membrane and *sthulasrotas* to functional system⁴, still a conclusion has not been made yet.

Pranavahasrotas

According to Cakrapani, the *srotas* through which the *pranavata* flow is called *pranavahasrotas*. “Pranavahanamitipranasajnakavatavahanam, etatchapranakhyavisishtha srota:”⁵ Hence *Pranavata* should be given prime importance. *Pranavata* have *murdha* as the *avasthitisthana* and *ura*, *kanta* as the *vicharanasthana*. Head is the seat of all *indriyas* (region where all the sensory and motor activities) are controlled from. That is why head is called as the superior organ or *uttamanga*. *Pranavahasrotas* concerned with these *indriyas* diverge from this centre controlling the life similar to the rays of sun.⁶

Functions of *pranavata* can be interpreted in two ways.

1. That which control the life – it include the functions like cardiovascular, respiratory, intellectual functions etc.
2. Through which the physiology of body is maintained – include the functions like deglutition, spitting, belching, sensory and motor activities etc.

In a study, the functions of *Pranavata* have been related to central nervous system as its main seat is *Murdha* and controls all the physiological functions by generating motor impulses after the integration of the sensory impulses from all over the body.⁷

Moolasthanana

Cakrapani says that *moolasthanana* means ‘*prabhavasthanana*’ which mean the anatomical seat of respective *srotas*, main seat of pathology of that *srotas* or principle seat of manifestation of the diseases of that *srotas*. *Susruta* has mentioned *moolasthanana* based on the circulatory process.⁸

- Caraka – Hridaya, Mahasrotas
- Susruta – Hridaya, Rasavahinidhamani

These are not directly related with the respiratory system.

Hridaya

The word Hridaya consist of three words, 'hru'- receiving, 'da' – supplying, 'ya'- maintaining it as a cycle. Based on these fuctions, heart, brain and lungs can be considered as hridaya, through which the life is maintained.

In Carakasamhita, siddhi sthana, hridaya is mentioned as the adhishtana for dasadhamani, prana- apana, manas, buddhi, chetana, mahabhuta. As the spokes are attached to the centre, these are associated to heart.⁹From Acharya Sarangadhara's explanation about physiology of respiration, it is understood that hridaya is the moola of pranavahasrotas, Adhamalla describes that 'nabhistha' mean hridayasthawhich can be taken as heart with vessels. Also Sarangadhara has mentioned the sthana of pranavata as hridaya.¹⁰

Mahasrotas

In Ashtangahridaya, sareerasthana, koshtangas are mentioned which include hridaya, phuphusa. So they can be considered as organ related to respiration.

Phuphusa which is mentioned among the koshtangas, mentioned as "Sonitaphenaprabhavam" in angotpatti. Phenadhatu can be taken as the lightest part of blood which is rich in vayu and akashamahabhutas. Lungs can be considered as cluster of bubbles or multiple air filled sacs.¹¹ According to Sarangadhara, phuphusais the adhara of udanavayu which is responsible for ucchwasakriya.

Mahasrotas can also be considered as abhyantararogamarga having synonyms koshta, madhyasareera, mahanimna, amasaya, pakwasaya. Swasa is amasayasamudbhavavyadhi and Pranavahasrotodushticikitsa is Swasaharikriya. By considering these factors also we can conclude that amasaya (mahasrotas) can be the moola of pranavahasrotas. Caraka considered the moolasthana according to the clinical pathology.

Rasavahinidhamani

According to Susruta, hridaya is the sthana of rasa, which circulate throughout the body through the 24 dhamanis. Susruta has considered the moolasthana according to the circulatory process.¹²

Relation of Respiratory and Nervous system

Respiratory system supply oxygen to blood and remove carbon dioxide. The brain monitors the respiratory volume and blood gas levels and regulate the respiratory rate. Breathing is an automatic and rhythmic act controlled by neurons in hind brain.

In the viddhalakshana of Pranavahasrotas, manifestation of neurological symptoms can be seen associated with abnormal rate and rhythm of respiration. Treatment of respiratory diseases also done with the drugs acting on nervous system. These show the relation of respiratory and nervous system.

Role of *Pranavata* and *Udanavata* in respiration

Pranavata– situated in *murdha* is involved in *swasaprakriya* along with other protective reflexes.

Udana – situated in chest, circulates between *nasa* and *nabhica*use the production of voice, through expiratory air.

Pranavaha srotodushti lakshana

Pranavahasrotodushtilakshana doesn't include diseases like swasa, kasa, pratishyaya etc. instead they look like disturbance of the rate and rhythm of respiration controlled by the respiratory centres of the brain. It is observed that abnormalities related to breathing pattern, rate and rhythm and associated complaints have

been given prime importance rather than the structural symptoms of respiration, like hikka, swasa, pratisyaya etc.¹³ When we analyse the srotodushtilakshanas, these are not only related with respiratory disorders, but it could be seen in some of the diseases of nervous system also. Some of the examples are

- *Atisrushtam* (tachypnea) – Neuromuscular disorders
- *Alpalpam*(shallowbreathing)– Anxiety, Stress,NMD(polio, muscular dystrophy)
- Breathlessness/ dyspnea – Parkinson’s disease, Dementia, Stroke

In ayurvedic point of view, following conditions in *vatavyadhi* have the respiratory symptoms like

- *Amasayagataavata* – *kasa, swasa*
- *Kaphavrtaprana* – *niswasauchhwasasangraha*
- *Pranavrtaudana* – *niswasauchhwasasangraha*
- *Apatantraka* – *krchrauchhwasa*

These also show the interrelation of both systems.

Pranavaha srotodushti rogas

Caraka has not mentioned pranavahasrotodushtirogas as such, but has told the involvement of pranavahasrotas in vyadhi like, kasa, swasa, hikka, vatavyadhi, hridroga, kshataksheena, rajayakshma, chardi, sothaetc but Susruta while describing dushtapranavata has mentioned diseases like swasa, kasa, peenasa.

Pranavaha srotodushti cikitsa

Swasaharikriyasince swasa is amasayasamudbhavavyadhi and amasaya is the moolasthanana of pranavahasrotas.

Treatment principle of swasa

In general, in *swasarogakapha* and *vatadosha* and *hridaya* and *amasayaas moolasthanana* should be considered. There are certain drugs available in Ayurveda classics which are curative as well as preventive in the management of *swasa*. *Swasa hara dashemani* is one of such *samanayoga* used in the treatment of *swasaroga*. The mode of action of *swasaharadashemani* drugs on both respiratory and nervous system will be explained further.

Rasa panchaka¹⁴

Sl. no	Drug	Rasa	Guna	Veerya	Vipaka	Dosha karma
1.	<i>Sati(Hedychium spicatum)</i>	<i>Katu,tikta, kashaya</i>	<i>Laghu, teekshna</i>	<i>Anushna</i>	<i>Katu</i>	<i>Vatakaphasamaka</i>
2.	<i>Pushkaramula (Inularacemosa)</i>	<i>Katu, tikta</i>	<i>Laghu, teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatakaphasamaka</i>
3.	<i>Hingu(Ferula narthex)</i>	<i>Katu, tikta</i>	<i>Laghu, teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatakaphasamaka</i>
4.	<i>Tulsi(Ocimum sanctum)</i>	<i>Katu, tikta</i>	<i>Laghu, ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatasamaka</i>
5.	<i>Agaru(Aquilariaagalocha)</i>	<i>Katu, tikta</i>	<i>Laghu,teekshna, snigdha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatakaphasamaka</i>

- *Katu rasa* – Combats the *kapha*, clears the obstruction in *srotas*
- *Tikta rasa* – *Amapachaka, lekshana, kanta-sodhana*
- *Ushnaveerya* – *Agnimahabhuta* dominant, *pachana*, liquefaction of *kapha*
- *Laghu, Teekshna* – Antagonistic to *kapha*, normalize *kapha*
- *Rukshaguna* – *Kaphasoshana*

These drugs are *Kaphavatasamaka*.

The drugs *Pushkaramula* and *Tulsi* have direct action on *pranavahasrotas* because of *Dravyaprabhava*. *Pushkaramula* is *agrya* in *Parswasula* and *Tulsi* is *agrya* in *Tamakaswasa* (P.V. Sharma).

Sl. no	Drug	Rasa	Guna	Veerya	Vipaka	Dosha karma
6.	<i>Amlavetasa</i> (<i>Garcinia pedunculata</i>)	<i>Amla, kashaya</i>	<i>Laghu, ruksha</i>	<i>Ushna</i>	<i>Amla</i>	<i>Kaphavatasamaka</i>
7.	<i>Chanda</i> (<i>Angelica glauca</i>)	<i>Madhura, tikta, katu</i>	<i>Laghu, teekshna</i>	<i>Seetha</i>	<i>Katu</i>	<i>Kaphavatasamaka</i>
8.	<i>Tamalaki</i> (<i>Phyllanthusamarus</i>)	<i>Tikta, Kashaya, madhura</i>	<i>Laghu, ruksha</i>	<i>Seetha</i>	<i>Madhura</i>	<i>Kapha pitta samaka</i>
9.	<i>Ela</i> (<i>Elettariacardomomum</i>)	<i>Katu, madhura</i>	<i>Laghu, ruksha</i>	<i>Seetha</i>	<i>Madhura</i>	<i>Pitta vatasamaka</i>
10.	<i>Jeevanti</i> (<i>Leptadeniareticulata</i>)	<i>Madhura</i>	<i>Laghu, snigdha</i>	<i>Seetha</i>	<i>Madhura</i>	<i>Tridoshasamaka</i>

- Madhura, Snigdha – Dhatunourishment , ojas formation, brimhana
- Sheeta veerya– Sthirakarana, jeevanarasayana
- Madhura Vipaka– Kaphabhava in the body

Specific karma

Sl.no	Deepanapachana	Grahi	Hridya	Vatanulomaka	Kaphanissaraka
1	<i>Sati</i>	<i>Sati</i>	<i>Sati</i>	<i>Amlavetasa</i>	<i>Pushkaramula</i>
2	<i>Amlavetasa</i>	<i>Tamalaki</i>	<i>Pushkaramula</i>	<i>Ela</i>	<i>Ela</i>
3	<i>Ela</i>	<i>Jeevanti</i>	<i>Ela</i>	<i>Hingu</i>	<i>Hingu</i>
4	<i>Hingu</i>		<i>Chanda</i>	<i>Agaru</i>	<i>Tulsi</i>
5	<i>Tulsi</i>			<i>Jeevanti</i>	<i>Jeevanti</i>
6	<i>Chanda</i>				

- Deepana, pachana – Amapachaka, increase agni
- Hridya
Seetha veeryadravya – Normalize heart
Ushnaveeryadravya– Increases functional capacity
- Vatanulomana
Hingu – Ushnaveerya
Amlavetasa – Amla rasa
- Kaphanissarana – it can be of two actions.
Kaphotklesaka - Ela, jeevanti
Kaphachedana – Hingu, tulsi, pushkaramula
- Madhura, snigdha – reduces the viscosity and liquefy the dry sputum and thus helps in easy expulsion – kaphotklesaka
- Chedana – ‘slishtaankaphaadikaandoshanunmulayatiyatbalaat’

Specific karma

Sl. no	Action on respiratory organs	Krimighna/pratidushaka	Rasayana
1	<i>Pushkaramula</i> (<i>phuphusavaranasohta, swasananalikasohta, parswasula hara</i>)	<i>Hingu</i>	<i>Tamalaki</i>

2	<i>Hingu (jeernaswasananalिकासोथा)</i>	<i>Tulsi</i>	<i>Jeevanti</i>
3	<i>Tulsi (parswasula hara)</i>		<i>Ela</i>

Pharmacological activity

Some of the studies on pharmacological activities are enlisted below.

Sl no	Drug	Research activity
1.	<i>Sati</i>	Anti-histaminic activity – in histamine induced bronchospasm in guinea pigs, which showed an increase in latent period of pre convulsive dyspnea in pigs. Anti-inflammatory activity also proven and chemical constituent for the activity was found to be β -sitosterol. ¹⁵
2.	<i>Pushkaramula</i>	Mast cell stabilizer activity – the ethanolic extract of <i>Inularacemosa</i> is active in the Type-I allergic conditions because of their ability to inhibit the release of mediators from mast cells and thus influence the course of the disease by preventing the harmful effects of the released mediators. The preliminary phytochemical tests showed the presence of flavonoids in the ethanolic extract. Plant flavonoids are known to inhibit basophil histamine release and neutrophil beta glucuronidase release, and thereby possess in-vivo anti-allergic activity. ¹⁶
3.	<i>Tulsi</i>	Anti-asthmatic activity done in histamine induced pre-convulsive dyspnea in pigs. Volatile oil showed the anti-asthmatic activity. Anti-inflammatory activity – chemical constituent eicosapentaenoic acid inhibit the inflammatory mediators prostaglandins and leukotrienes. ¹⁷
4.	<i>Agaru</i>	Anti-inflammatory activity proven which inhibit histamine, bradykinin, prostaglandin etc. ¹⁸
5.	<i>Ela</i>	Bronchodilatory effect was proven which is mediated through Ca ion antagonist mechanism and improve hyperactive status of respiratory system. ¹⁹
6.	<i>Hingu</i>	Muscle relaxant activity done in tracheal smooth muscles of guinea pigs. The muscarinic receptor blockade which aids bronchodilation. ²⁰

Action of swasahara dashemani on nervous system

Only five drugs among the *swasahara dashemani* have direct action on nervous system.

Sl. no	Drug	Action on nervous system
1	<i>Pushkaramula</i>	<i>Mastishkadourbalya, vatavikara</i>
2	<i>Hingu</i>	<i>Uttejaka, vedanasthapaka, sajnasthapaka, akshepahara</i>
3	<i>Agaru</i>	<i>Uttejaka, vatahara</i>
4	<i>Tulsi</i>	<i>Vedanahara, akshepasamaka</i>
5	<i>Chanda</i>	<i>Medhya, sajnasthapana</i>

Some of the *karmas* are explained below.

Vedanasthapaka

Vedana is vataprakopapratyatmalakshana. Here vatasamaka and ushnaveeryadravyas can be used. Eg. Hingu, tulsi.

Sanjnasthapana

Teekshna, ushnadravyas can be used. Eg. Hingu

The dravya does hridayauttejana and thereby increase blood flow to brain. Sometime excessive ushna may aggravate the condition and develop disease. In such cases seethaveerya drugs can be used. Eg. Chanda. In Murcha both pitta and tamadosha are involved. If pitta is predominant, seethaveeryadravya can be used and if tama is predominant ushna, teekshnadravya can be used.

Akshepanasaka

Ushnaveerya and vatasamanadravya can be used. Eg. Tulsi, hingu

Pharmacological activity related to nervous system

Sl. no	Drug	Pharmacological activity
1.	Hingu	Anxiolytic, analgesic and sedative properties of asafoetida. ²¹
2.	Agaru	Anxiolytic, anti convulsant activity and flavonoids and saponins were reported to exhibit the activity. ²²
3.	Tulsi	Anxiolytic activity was proven, eugenol and ursolic acid were reported to possess anti-stressor activity. ²³ Also reported to have cognition enhancement, antidepressant and antianxiety properties in Alzheimer's disease experimental model. ²⁴
4.	Amlavetasa	Neuroprotective activity with decreased AChE level. ²⁵
5.	Ela	Neuroprotective activity showing inhibition of AChE activity. ²⁶
6.	Canda	Scopolamine induced dementia in rats showed improvement in learning and memory activity and inhibition of AChE activity in hippocampus. ²⁷
7.	Tamalaki	Neuroprotective activity. ²⁸

Discussion

Drugs which can probably act at acute phase of asthma attacks

In *swasacikitsa*, we can adopt *vegakalina* and *avegakalinacikitsa*, nebulization with arka had given better results in the acute attacks of asthma, most of the *swasaharadashemani* drugs contain volatile oils. The drugs which contain comparatively high concentration of volatile oil can be made into arka form and used in the form of nebulization. The drugs that have direct action on *pranavahasrotas* also can be used in acute conditions. Common properties of these drugs are *teekshna*, *ushna*, *laghu*, *katu*, *tikta rasa* and specific *karmas* like *hridya*, *vatanulomaka*, *kaphanissaraka*, *krimighna*. Some of the probable drugs that can be used in acute attacks are *sati*, *pushkaramula*, *hingu*, *tulsi* and *agaru*.

Drugs which can be given in between the asthma attacks

The drugs should have the *rasayana* property, enhance immunity, *balya*. They should have common properties like *madhura*, *snigdha*, *seethaveerya* etc and can be used in *churna* / *ghrta* form. The drugs which can be used in between the attacks are *tamalaki*, *ela*, *jeevanti*, *agaru*, *pushkaramula*.

Drugs acting on initial condition

In the initial stage *ama* is formed. *Deepana*, *pachana* and *vatanulomanadrugs* have more action. The drugs *sati*, *ela*, *hingu*, *tulsi* can be used in this condition in *choorna* form.

Action on nervous system

These drugs are not indicated in *kevalavata* conditions and most of the drugs used in *kaphayuktavata* conditions. They have general properties like *katu*, *tikta rasa*, *laghu*, *teekshnaguna*, *ushnaveerya*. In *pitta* vitiated conditions, *hingu*, *pushkaramula*, *tulsi* are not indicated.

Conclusion

Pranavahasrotas is usually related with the respiratory system. As *Pranavata* is the main entity it should be studied in relation to nervous system also. *Swasaharadashemani* is not a frequently used formulation due to non-availability of certain drugs, controversial drugs, substitutes. But the addition, deletion of drugs are mentioned by *Acharya*. The logical use of these drugs in different conditions of *swasa* serve the purpose. The actions of *Swasaharadashemani* drugs are not limited to respiratory system, they include drugs acting

on nervous system also. Researches also have proven the efficacy of *swasahara* medicines in nervous disorders .So, these drugs can be judiciously used along with the medications of nervous system.

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