

A SYSTEMATIC APPROACH TO ANALYZE STHIVANA LAKSHANAS IN DIFFERENT VYADHIS.

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ABSTRACT:

'*Sthivana*' (expectoration) is the product that comes out after cough. It is also called as '*Nishthvana*' (sputum). It is the secretion of lungs that is *mala roopi kapha*¹ which may contain some amount of *Shonit* (blood), *Pitta* (bile), or *Puya* (pus).² *Sthivana* comes out after *Kasa* (cough) which gives a hint regarding *vikriti* of *Udan Vayu* in *Kantha pradesha* producing '*khas*' sound or *shabda*³. *Kasa* is one of the most common *Pranavaha strotodushti vikara* (disorder of Respiratory System) observed clinically and *nishthivana* can be seen as a prominent feature. As *Pranavaha strotodushti* (hampered Respiratory System function) conveys diseases affecting the *Prana* (life), this has to be considered as *vyadhi* of prime importance.

In Ayurveda classics we find very few references regarding *Sthivana pareeksha* (sputum examination) with special reference to sputum. So here an attempt is made to compile different characters of *sthivana* (expectoration) mentioned haphazardly in different diseases mentioned in our *samhitas*. Also an attempt is made to compare types of *sthivana* with characters of sputum mentioned in modern science so that early diagnosis of disease can be done and also treatment can be planned in a better way.

KEYWORDS: *Nishthivana*, Expectoration, Sputum.

INTRODUCTION:

In Ayurvedic texts *Kasa* is explained as an independent disease as well as it can be a *vega*, *Lakshana* (symptom) and *updrava*⁴. When there is occurrence of an obstruction to the *Vayu* (vata) in the lower portion of the body, it moves upwards and afflicts the channels of circulation there and takes the function of *Udana Vayu*, gets lodged in the throat region and chest. In turn, this *Vayu* (vata) enters the channels of head resulting in bending and stretching of the body, jaws, neck and eyes. After causing contraction in these areas, *Vayu* (vata) causes coughing which can

be dry or can be with phlegm⁵. Patient gets relief after a *vega* of *kasa* and there is no pain while coughing up a sputum⁶. It makes the difference between the *kasa vega* and *kasa* as a *swatantra vyadhi*.

The word *Kapha* applies to both *dosha* and *Rasa dhatu mala*, in *prakruta avasta* it does its *prakruta karma* along with the help of *Vata dosha*, the relation between *dosha*, *dhatu* and *mala* can be well defined in regards to *Kapha dosha* that's why it is called as *Bala* in *prakrita avasta*.⁷ But in *vikrit avastha* having *mala roopi kapha* our body expel out it from the lungs in the form of *sthivana*.

The functions of *Pranavata* is said to be production of *Sthivana* (sputum), *Kshavathu* (sneezing), *Udagara* (belching), *Nishvasa* (inspiration), *Annapravesha* (swallowing), *Buddhi*, *Hrudaya*, *Indriya*, *chittadhruk* (proper functioning of sense organs, heart, intelligence and mind).⁸ It can be seen as a prominent feature of *Pranavaha strotodushti vikara* (disease of Respiratory System) which occurs in the body as a result of the defective etiology.⁹

The action of expectoration of phlegm or mucus from the throat or lungs by coughing, hawking or spitting. Sputum examination refers to the substance coughed out from the lungs, bronchi, trachea, and larynx¹⁰. Normally, sputum is mainly composed of mucus and also certain cellular and non-cellular components of host origin. During expectoration, sputum gets contaminated with normal bacterial flora and cells from pharynx and mouth.¹¹

According to NCMH (National Commission on Macroeconomics and Health) cough is a burden disease¹². The symptom of cough can be short lived or last years; cough can be defined as acute (lasting less than 3 weeks), Sub acute cough has (lasting for 3-8 weeks) and chronic (lasting more than 8 weeks).¹³ A cough may be dry or it may be productive with sputum.¹⁴ It is the most frequent symptom of respiratory disease for which medical consultation is sought.

In Ayurveda classics, there are very few references regarding *Sthivana pareeksha* (sputum examination). So this article mainly explains about both Ayurveda and Modern view regarding Sputum features in various diseases.

AIM AND OBJECTIVE:

AIM: To compare different types of *sthivana* with features of Sputum.

OBJECTIVE: (1) To analyze *sthivana lakshanas* in different vyadhis.

(2) To compare different *lakshanas* of *sthivana* with characters of sputum mentioned in modern medical science.

MATERIALS AND METHODS:

Ayurveda and contemporary texts and internet sources.

DISCUSSION:

Kapha dosha

“ken jalena phalati iti kaphah” Su.Su.21/8¹⁵

Kapha is made up of *udaka* (water) in the body. The function of *udaka* is *samyog* (to bind), that's why *samyogkarta kapha* is called *sleshma*.

Prakrit kapha dosha and karma

“Sleshma sthirtva snigdhtva sandhibandh kshamaadibhihi | ” A.H.Su. 11/ 3 ¹⁶

Sleshma confers stability, lubrication, compactness of the joints, forbearance and such others.

Kapha is called as *bala* and it is *madhur* (sweet) in taste in *prakritavastha* and *Lavana* (sour) *rasatmaka* in *vikritavstha*.

Features of increase in kapha

“*Svaitya shaitya kandu gaurava sneha supti kleda upadeha bandha madhurya chira karitvani shleshmanah karmanih tairanvitam shleshma vikarameva adyavasyet* ” C.Su. 20/ 18 ¹⁷

Various *Kapha* properties produce these features such as *shukla* (white) property gives rise to whitishness, *Sheeta* (cold) property gives rise to coldness, *Guru* (heavy) property can be seen as heaviness in the body. ‘*Bandha* and *Uplepa*’ (adhesive and coating) *gunas* of *Kapha* gives rise to features like *strotas liptata* (obstruction of channels), *Dhamani Praticaya* (Atherosclerosis). It also leads to *Sandhi Shlishtata* (compactness of joints) and its *Poshak*(nutrition) property gives rise to obesity. ¹⁸

Vridhdha kapha dosha karma:

“*Sleshma agnisadan praseka alasya gauravam*

Svaitya shaitya shlatha angtvam svasa kasa atinindratah ” A.H.Su. 11/ 7 ¹⁹

Agitated *kapha dosha* produces excess of saliva, mucous. Due to the reason by this further *vikrti* take places and *agnisaad* and others *lakshanas* can be seen. *Svasa* is seen because agitated *kapha* blocks the channels of *vata* and *kasa* is the protective reflex to clear the airway from excess of the *kapha*(mucous).

As *vridhdha kapha*(agitated cough) hampers the function of *Agni*(digestive fire) there is a obvious production of *Aam*(undigested food particles) can be occurred.

General symptoms of Aam:

“*Srotorodha balbhramsa gauravanila moodhatah*

Aalasya apakti nisthiva malasanga aruchi klamah ” A.H.Su. 13/23-24 ²⁰

Acharya Vagbhatta clearly stated in the above shloka that if there is occurrence of Ama in the body, nishthivana (spitting) can be seen along with blockage of minute channels, lassitude, heaviness in the body and constipation.

Sama kapha lakshamas:

“*Aavil satantulaha styaanah kanthdeshe avatisthate*

Balaaso durgandhihi kshududagara vidhyaatkrit” A.H.Su.13/37-38²¹

There is increased turbidity of *balasa* (*kapha*/ Phlegm/ Phlegmatic humour) which is thread, sticky, stagnates in throat, foul smell, complete loss of appetite and obstructs the eructations.

Commentator Dalhana of Sushruta-samhita defines some of these functions as follows.²²

1) Spitting sputum is *sthivana* (sputum).

i.e. to forcefully clear tracheal and pharyngeal mucous.

As ‘*kapha*’ is *mala* of *Rasa dhatu* we can consider *Saama Rasadhatu malaroopi kapha lakshana* for examination of *sthivana* (sputum).

They are: 1) *Shuska kapha* - Dry cough

2) *Sa kapha* - cough with sputum

3) *Sleshmanam pitta samsrushtham* – Expectorates sputum mixed with pitta

4) *Bahulam madhuram snigdham nishthivati ghanam kapham*- large amount of thick sputum comes out which is sweet in taste and unctuous.

5) *Durgandham haritam raktam sthivet pooyopamama kapham* – sputum comes out mixed with pus, which yields foul smell, colour is green or red.

6) *Pichchilama bahalam haritam svetapeetakam kasmano rasam yakshmi nishthivati kaphanugam*²² – Patient of *rajyakshma* spits out sputum which is slimy, large in quantity, viscus, putrid smell, green, white or yellow in colour.

Sputum expulsion, sneezing and belching –

Mucous which is accumulated in airways of neck and thorax is expelled out through mouth is the function of *pranavayu* along with sneezing, belching, Inhalation, ingestion etc. Direction of *Pranavayu* could be from outside of body but direction of expectorating mucous is from inside out. Same direction is of belching, sneezing, too. Whenever there is any obstruction to its direction, clearance of obstruction is needed to be immediate. As *Pranavaha strotodushti* (hampered Respiratory System function) conveys diseases affecting the *Prana*(life) This could be the reason of allotting functions like expulsion of mucus, sneezing, belching to *pranavayu*.²³

There is evidence that strongly suggests that reflux commonly provokes cough by stimulating an esophageal-bronchial reflex without aspiration.²⁴ By irritating the lower respiratory tract by micro or macro aspiration, the cough reflex also can be stimulated. Gastro esophageal reflux disease (GERD) can potentially do it, too.

Management of obstructive airway diseases such as asthma, chronic obstructive pulmonary diseases (COPD) and other disorders is made easy by doing induced sputum analysis. Numerous studies has been demonstrated that it is non-invasive tool for the diagnosis of a disease. Its safety and efficacy is superior to previous techniques for determining airway inflammation. It is a noninvasive and highly reproducible approach in generating a measurable index of inflammatory cells in the airways of the lungs.²⁵

Sputum Examination:

Mucoid sputum is characteristic in patients with chronic bronchitis when there is no active infection, it is clear and sticky and not necessarily produced in a large volume. Sputum may become mucopurulent or purulent when bacterial infection is present in patients with bronchitis, pneumonia, bronchiectasis or a lung abscess. In these last two conditions, the quantities may be large and the sputum is often foul smelling. Occasionally asthmatics have a yellow tinge to the sputum, owing to the presence of many eosinophils. People with asthma may also produce a particularly tenacious form of mucoid sputum, and sometimes they cough up casts of the bronchial tree, particularly after an attack. Patients with bronchopulmonary aspergillosis may bring up black sputum or sputum with black parts in it, which is the fungal element of the *Aspergillus*. When sputum is particularly foul smelling, the presence of anaerobic organisms should be suspected. Very ill patients with pulmonary oedema may bring up pink or white frothy sputum. Rusty-coloured sputum is characteristic of pneumococcal lobar pneumonia. Blood may be coughed up alone or bloodstained sputum produced in bronchogenic carcinoma, pulmonary tuberculosis, pulmonary embolism, bronchiectasis or pulmonary hypertension (e.g. with mitral stenosis).

Sputum can be examined under the microscope in the laboratory for the presence of pus cells and organisms and may be cultured in an attempt to identify the causative agent of an infection and antibiotic resistance patterns sputum to be examined for acid-fast bacilli when appropriate; tuberculosis (TB) requires specialized techniques of laboratory microscopy and culture to identify the responsible organisms, and if the diagnosis is suspected, these tests must be specifically requested. Non-tuberculous mycobacteria (NTN) can occur in patients with chronic underlying lung pathology such as COPD and bronchiectasis.²⁶

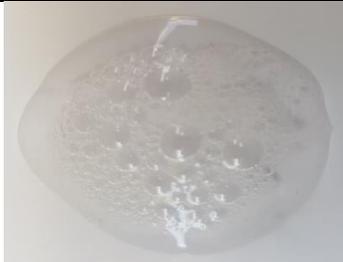
RELATION BETWEEN VARNA, JALANIMAJJANA PAREEKSHA AND SADHYASADHYATA (PROGNOSIS)

Regarding prognosis of the disease in a patient based on *varna* (colour) of *sthivana* and *jala nimajjana pareeksha* (Test based on sinking or floating in water) in *charaka samhita- Indriya*

Sthana. Copious expectoration of sputum having blue, yellow or red colour from *uras*(chest), Physician should discard him from a distance. If sputum sinks in water when placed on it, he should be considered as moribund. If several colours appears in sputum of a person and if it sinks in water, he can not survive.²⁷

In some of the vyadhis *sthivana* can be seen in various type of character with modern comparison that can be seen in table no.1

Table:1 PRESENTATION OF *STHIVANA* IN VARIOUS DISEASES

| <u>Vyadhi</u> | <u>Sthivana lakshanas</u> | <u>Modern diseases</u> | <u>Features of Sputum</u> | <u>Images</u> |
|----------------------------|----------------------------|---|-----------------------------------|--|
| <i>Raktadhatugat Jvara</i> | <i>Sarakta sthivana</i> | ?Lung carcinoma ?Tuberculosis | Haemoptysis (Blood tinged sputum) |  Image(1) ²⁸ |
| <i>Vataja Kasa</i> | <i>Shuska</i> | Whooping cough Simple pulmonary eosinophilia | Paroxysmal, Dry or unproductive |  Image(2) ²⁹ |
| <i>Pittaja Kasa</i> | <i>Pita nishthivana</i> | Acute Bronchitis | Scanty, Viscid & Yellow |  Image (3) ³⁰ |
| <i>Kaphaja Kasa</i> | <i>Snigdha Ghana kapha</i> | Chronic Bronchitis | Nocturnal cough (with wheezing) |  Image (4) ³¹ |

| | | | | |
|---------------------------------|--|---|---|--|
| <i>Kshataja Kasa</i> | <i>Shuska, Sarakta sthivana</i> | Bronchiectasis | Wet or productive, foul smelling, Viscid & Yellow |  Image (5) ³² |
| <i>Kshayaja Kasa</i> | <i>Harita Rakta Sapooya</i> | Tuberculosis | White & Mucoid |  Image (6) ³³ |
| <i>Urahkshata / Kshatkshina</i> | <i>Dusta, Bahumatra</i> | Bronchiectasis | Wet or productive, foul smelling, Viscid & Yellow |  Image (7) ³⁴ |
| <i>Rajayakshama</i> | <i>Pichchhila, Bahala, Vistra, Harit, Shwetpitam</i> | Tuberculosis | More quantity of thick sputum |  Image (8) ³⁵ |
| <i>Kaphadhik Amlapitta</i> | <i>Kapha nishthivana</i> | GERD (Gastro Esophageal Reflux Disease) | Nocturnal cough |  Image (9) ³⁶ |

| | | | | |
|------------------------------|---|-----------------------------|------------------------|--|
| <p><i>Apakva Peenasa</i></p> | <p><i>Kshama sthivana (Saama kapha)</i></p> | <p>Sinusitis / Rhinitis</p> | <p>Nocturnal cough</p> |  <p>Image (10)³⁷</p> |
|------------------------------|---|-----------------------------|------------------------|--|

Miscellaneous:

Vayu kshina, Pitta Vayu kshina, Pitta Sama Kaphadhika- Pitatvam sthivana(Yellowish Sputum)- Obstructive jaundice ³⁸

Avirikta lakshana(The one who has gone under virechanas)- *Sthivana sleshmapittayo* ³⁹

20 Kaphaja vikara (disorders of kapha)- *Sleshmodgirana* (Expectoration of mucous)

*Shosha- Shonitam sthivati*⁴⁰

Unmada- Phenagamana Asyaat⁴¹

Apasmara- Phenam vamana⁴²

Nirama Kapha dosha lakshana- Nir gandha, Phenavana, Chhedavana⁴³

CONCLUSION:

Sthivana or *nishthivana* is the end product of *Kasa* (cough). *Kasa* can be either *vega* or *vyadhi*. One which produces the '*dukha*' in *shaarir* (any kind of pain in body), with increased frequency of cough bouts, with the specific *nidana* and *poorvarupa*, associated *lakshanas* (symptoms) etc. will be considered as *Kasa roga*.

In classics there is a reference which shows if *Kasa*(cough) is present, definite *vikriti* of *kapha dosha* should be present. Symptoms which are present currently or which can be appreciated in patient shows lot of similarities with the *lakshanas* mentioned in our classics. We have tried to correlate some of the important variations of *nishthivana* (sputum) with different types of expectoration i.e based on colour, consistency etc. Some of them are like characteristics of haemoptysis (blood tinged sputum) can be compared with *sarakta sthivana* which is appreciated in *Raktadhatugata Jvara* as well as in *urdhava raktapitta*, mouth is a place where *dushita rakta* is expelled out. In *Vataja Kasa Shuska nishthivana* occurs without mucus as it is seen in Whooping cough and Simple pulmonary eosinophilia etc.

Further such kind of interpretations in detail will help us in understanding different *lakshanas* (symptoms) and *avasthas* (stages) of *kasa* which will pave the way for better and early diagnosis and treatment.

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- 32- Image 5
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36- Image 9

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37- Image 10

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39- Charaka Samhita by Yadavji Trikamji Acharya , Chaukhamba publication, Varanasi,

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40- Charaka Samhita by Yadavji Trikamji Acharya , Chaukhamba publication, Varanasi,

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43- Bhavprakash by Bhavmisra, in pratham khnda adhyaya 1st in shloka 55th pg no. 73.