

CRITICAL ANALYSIS OF SHTEEVANA PARIKSHA IN AYURVEDA

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**ABSTRACT**

Pariksha is considered to be an examination, as it has great importance in the evaluation of patient health status. Ayurveda broadly classifies the disease diagnosis process into two methods which are *Roga Pariksha* (examination of disease) and *Rogi Pariksha* (Examination of the patient). *Rogi Pariksha* (Examination of the patient) is an important parameter in the diagnosis of a disease as before diagnosis, the treatment of a disease is not possible. The examination of *Shteevana* (Sputum) plays an important role in the diagnosis of disorders like *Pranavaha Srotus Vikara* (respiratory diseases). Ayurveda includes *Trividha Pariksha* (Threefold examination) such as *Darshana* (inspection), *Sparshana* (palpation) and *Prashna* (history taking). The *Shteevana Pariksha* (examination of sputum) is not explained separately but it can be analyzed under *Trividha Pariksha* (Threefold examination). Through Colour, Consistency, Quantity, Odour etc. of Sputum one can make a diagnosis.

Keywords: *Pariksha*, *Shteevana*, Sputum.

INTRODUCTION

Ayurveda emphasized not only the treatment modality of diseases but also gives importance to the various diagnostic methods which play a significant role in the identification of the pathological condition. *Shteevana*

(Sputum) is considered to be secretion of the lungs (*mala rupa Kapha*) which has become increased and may contain *Rakta* (blood), *Pooya*(pus), *Krimi*(bacteria) and even *puppusa mamsa* (lung tissue)¹.

Tracheobronchial secretions are often collectively referred to as sputum. In our classics, we have references about *Shteevana pariksha* (examination of sputum) which are scattered. As the examination of sputum can reveal vital information about disease affecting the lungs, therefore it plays a key role in routine diagnosis and treatment of disease of respiratory infection. Examination of sputum has its importance in diagnosis and *avastha vishesha* of *Pranava Sroto Vikaras* (respiratory channel disorders) like *Rajayakshma* (Tuberculosis), *Kaphaja kasa* (Chronic bronchitis), *Urakshata* (chest injury) etc, also in non *Pranava-sroto Vikaras* (non-respiratory channel disorders) like *Kaphaja pandu* (anemia), *Sannipataja jwara* (fever) etc. Therefore, with all importance of *Shteevana Pariksha* (examination of sputum) one should thoroughly examine sputum for proper diagnosis.

Aim and Objectives - To analyze the *Shteevana pariksha* (examination of sputum) in Ayurveda.

Material and Methods: Conceptual references are taken from compiled textbooks of *Roga nidana*, *Samhitas* and related websites. After studying the related concepts, an effort has been made for a conclusion that is based on review and discussion.

Vridha Kapha Dosha Karma:² Aggravated *kapha dosha* produces *Praseka* (excess salivation) and mucus, due to this further *vikruti* (pathology) takes place and *Agnisada* (exhaustion of digestive power) and other *lakshanas* (symptoms) are produced.

As aggravated *kapha* hampers the function of *Agni* (digestive fire) there is obvious production of *Ama* (unprocessed or undigested food particles) can occur.

General symptoms of Ama:³

Acharya Vagbhata quoted that if there is the occurrence of *ama* in the body, *nishtiva* (sputum) can be seen along with *Srotorodha* (blockage of minute channels), *Bala bhramsha* (lassitude), *Gourava* (heaviness in the body) and *Anila moodhata* (constipation), *Alasya* (laziness), *Aruchi* (anorexia) *klama* (fatigue). We can consider *sama kapha lakshanas* as *shleshma pariksha* (examination of sputum) in Ayurveda.⁴ As *kapha* is the mala of *rasa dhatu* we can consider *sama rasadhatu malaroopi kapha lakshana* for examination of *shteevana* or *shleshma* (sputum).⁴ *Rasadhatu*

malaroopi kapha combines with *ama* then symptoms will be like, *Sa kapha* – cough with sputum, *Shleshmanam pitta samsrushtam* – sputum mixed with pitta. The thick sputum which is *Bahulam* (large amount), *madhuram* (sweet), *snigdham* (unctuous) ⁵ large amounts of thick sputum comes out which is sweet in taste and unctuous. Coughed out sputum is *Durgandhi* (foul smell), *hareetam* (green), *raktam* (red) *sheetavat pooyopamam* (with pus)⁶ *Rajayakshma* (Tuberculosis) patient cough out sputum which is *Picchilam* (slimy), *bahalam* (large in quantity), *visram* (putrid smell), *harita* (green), *sheeta peetakam* (white or yellow) in colour.⁷

Collection of Shteevana: The patient is asked to gargle his mouth with plain water and then to cough up the sputum into a sterilized cup, care is taken to avoid saliva and pharyngeal secretions. The examination should be done without a lapse of time.¹

Prakruta Shteevana: *Shweta* (white), *Madhura* (sweetish), *Nirgandha* (odourless), *Mrudu* (soft), *Snigdha* (unctuous), *Picchila* (slimy), *Saandra* (dense).⁸

Pariksha Vidhi:⁹ *Bhoutika Pariksha* (Physical), *Anuveekshana Pariksha* (Microscopic)

Through pratyaksha pramana (inspection): *Chakshurendriya* (examination by sight) – *Shteevana pramana* (quantity), Consistency, *Sparshanendriya* (examination by touch) - Consistency, *Ghranendriya* (examination by a nose) - the odour of *shteevana* (sputum)

Through darshanendriya pariksha (examination by eye): Examination same as *chakshurendriya pariksha*

Examples for the appearance of sputum

1. *Kshayaja kasa- rakta, harita, pooyopama* (red, green, associated with pus)
2. *Kshataja kasa – Shushka kapha, sashonita* (dry sputum, associated with blood)
3. *Pittaja kasa- peeta nishteevat* (yellow sputum)

Relation between Dosha Vishamata and Shteevana¹ *Shteevana* (sputum) comes out after *kasa* (cough) easily if it is thin but when it becomes thick it can be brought out after severe coughing. Its physical features may be described as related to the predominant doshas as follows:

Table 1

	Vata	Pitta	Kapha
Pramana (Quantity)	Alpa (scanty)	Madhyama (moderate)	Bahu (copious)
Varna (Colour)	Shweta (white)	Peeta (yellow) Haridra (bright yellow) Harita (green), Neela (blue)	Shukla (very white)
Gandha (Odour)	Alpa gandha (Slight odour)	Ati durgandha (Foul smell)	Agandha (Odourless)
Sparsha (Touch)	Vishada (Not sticky) Laghu (Light, floats on water) Sheeta (Cold)	Ushna (Warm)	Sheeta (Cold) Picchila (Very sticky)
Samyoga	Rakta (Rarely blood)	Rakta (Blood) Pooya (Pus)	
Anya lakshana (Others)	Phenila (Frothy)		Grathita (Lumpy, Mucoid mass)

Differential diagnosis of Shteevana based on its characteristics ^{8,9,10,11}

Quantity

Table 2:

Quantity	Diseases	
Alpa (Scanty)	Vataja Kasa, Pandu Poorvaroopa, Kaphaja Grahani, Vataja Pratishyaya	Bronchitis, Early stage of pneumonia
Madhyama (Moderate)	Pittaja Kasa, Krimija Hridroga, Kaphaja Pandu, Kaphaja Amlapitta,	Bronchitis, Tuberculosis, Bronchiectasis
Bahu (Large)	Rajayakshma, Kaphaja Kasa, Urakshata, Kaphaja Pratishyaya,	Chronic bronchitis, Cystic fibrosis, Lung abscess, Bronchiectasis

Consistency-Serous or water sputum- Clear and frothy, voluminous Mucoid sputum – clear and viscous, Purulent sputum- contains pus, composed of Mucopurulent - pale yellow or pale green

white blood cells, serous fluid, viscous fluid. It is typically yellow or green. Seen in cases of bronchiectasis, lung abscess, bronchitis

Table 3:

Consistency	Diseases	
Drava (Serous)	Nasa Srava, Peenasa, Pratishyaya	Pulmonary congestion, Ruptured hydatid cyst
Ghana/Sandra (Mucoid)	Kaphaja Kasa, Rajayakshma, Pakwa Peenasa, Bhramshatu	Asthma, Acute and Chronic bronchitis, early pulmonary TB
Phena (Purulent)	Apasmara, Nasasrava	Bronchiectasis, Pulmonary tuberculosis
Vigratita (Mucopurulent)	Urakshata	Infection of bronchi and lung
Sarakta (Blood stained)	Rajayakshma, Kshataksheena, Raktaja Pratishyaya, Arbuda	Pneumonia, bronchitis, tuberculosis, cystic fibrosis

Colour

White sputum- It can be normal but may be present in increased amounts with some lung diseases like COPD, pneumonia, pulmonary edema and also in GERD, Red or bloody sputum –Blood-stained mucus from the lungs or tracheobronchial tree. Involvement of either vascular system of lung i.e, pulmonary vessels and bronchial vessels. also due to vascular

engorgement with erosion. Yellow or green sputum – A type of white blood cell known as neutrophils causes green sputum in smokers and chronic bronchitis and occurs bacterial infection of the lower respiratory tract, Brown sputum – It is due to the presence of tar, is sometimes found in people who smoke. Sputum may also appear brown or black due to the presence of old blood.

Table 4

Colour	Diseases	
Shweta (White)	Rajyakshma, Kaphaja Pratishyaya, Kshyaja kasa	Pulmonary alveolar proteinosis
Rakta (Red)	Kshataja kasa, Kshyayaja kasa, Rajyakshma, Raktadhaatugata jwara, Samasannipataja jwara	Hemoptysis, Lobar pneumonia, Pulmonary tuberculosis, Amoebic lung abscess
Harita (Green)	Kshayaja kasa, Rajyakshma, Kamala	Pseudomonas, Haemophilus and pneumococcal infection
Peeta (Yellow)	Urakshata, Rajyakshma, Pittaja kasa, Pittaja pratishyaya, Pitta kapha pradhana sannipataja jwara	Staphylococcus infection
Shyava (Blackish or brown)	Urakshata	pneumoconiosis due to inhalation of coal miners
Raktapeeta (Rust coloured)	Samasannipataja jwara, Rajyakshma, Jeerna jwara	Pneumococcal infection, pulmonary embolism, lung cancer
Neela, Peeta, Salohita	Arishta	Pyocyanin- gram-negative bacterium Pseudomonas aeruginosa

Odour – Foul-smelling sputum- foul-smelling compounds called cadaverine and putrescine are released

by anaerobic bacteria, therefore, it is associated with anaerobic infections due to aspiration, lung abscess.

Table 5:

Odour	Diseases	
Durgandha (foul smell)	Rajyakshma, Kshayaja kasa, Urakshata, Putinasya, Peenasa	Lung abscess, Bronchiectasis, Fetid bronchitis

Viscosity: The respiratory mucus consists largely of water and its slimy character is due to glycoproteins cross-linked together by disulfide bonds. In pathological states more mucus may be produced, an exudate

of plasma proteins that bond with glycoproteins and form larger polymers results in the mucus becoming more viscous.

Table 6:

Viscosity	Diseases	
Picchila (Slimy)	Kaphaja kasa, Rajyakshma	Influenza and Bronchogenic carcinoma

Rakta and Shteevana ⁸

There is a possibility of blood-stained sputum and fully blood mixed sputum may be due to *Nasagata Raktasrava* (nasal bleeding), *Rakta* from *Mukha* or *Aantra* (bleeding from mouth or intestine) therefore we need to differentiate between them. *Rakta vamana* (Hematemesis) can be seen in – *urdhwaga raktapitta* (bleeding disorder), *urdhwaga amlapitta* (acid peptic

disease), *tridoshaja chardi* (vomiting), *mukha arbuda* (oral carcinoma), *danta vidradhi* (abscess), *amashaya bhinna*.

Table 7:

<i>Rakta Shteevana</i> (Hemoptysis)	<i>Rakta Vamana</i> (Hematemesis)
Coughing up of blood	Vomiting up of blood
Due to respiratory infections such as cystic fibrosis, pneumonia, tuberculosis, pulmonary embolism, cardiovascular disease	Gastrointestinal problems such as stomach cancer, gastritis, peptic ulcer, liver cirrhosis
Foamy and bright red blood	Coffee grounds or brown to black

Relation between Shteevana Varna, jalamajjana pariksha and Arishta^{12,13}

Acharya Charaka has explained when the patient is having a large amount of *Kapha* (Sputum) in *Ura Pradesh* (Chest region) and on cough up, if it comes out with *Neela* (Blue), *Peeta* (Yellow), *Salohita Varna* (Red) and when it sinks into the water then it is considered to be *Arishta* (imminent death). *Jala nimajjana pariksha* (examination of stool by dipping in water)¹³ It is similar to other *Ama Pakwa Pariksha* for *pureesha* (Stool) and *veerya* (Semen) Take a big, mouthed vessel with water and put collected sputum in the vessel, *Nirama Kapha* – Floats in water, *Ama Kapha* – Sinks in water, to decide *Ama* or *Nirama Avastha* we also need to know about other *Lakshanas* of *Sama* and *Nirama Kapha*¹⁴ *Ama Kapha*- *Avila* (turbidity), *tantula* (thready), *sthyana* (sticky), *kantadeshe avatishtate* (stagnates in the throat), *durgandha* (foul smell), *kshut udgara vighaata* (complete loss of appetite and obstructs the eructation's). *Nirama Kapha*- *phenavaan* (frothy), *pindita* (clumpy), *pandu* (whitish), *agandha* (odourless) *Nirama Kapha*- If sinks in water, then known to be *Arishta* (imminent death). As *ama* is having qualities of *kapha* like *guruta* (heaviness), *snigha* (unctuous) etc, due to gravitational force the *ama kapha* will sink into the water and *nirama kapha* which is having opposite qualities of *ama kapha* will float into the water while performing *jalamajjana pariksha*.

Microscopic⁸

Microscopic examination of the Sputum after staining it with various dyes, reveals the different *Sookshma Krimi* (bacteria) such as Streptococci, Staphylococci, Pneumococci, Bacilli of Tuberculosis, Fungi etc. Small shreds of lung tissue, cast cells and even cancer cells can be detected. In *krimija hridroga* due to intake of *tula guda ksheera* (sesame, jaggery, milk), there will

be the formation of *granthi* (benign growth) their *rasa dhatu* will produce *kledata* (moisture) i.e with *anumana* (inferential) we infer that in the case of *rasa dushti* (vitiating of *rasa dhatu*), *kleda vriddi* (increased moisture) occurs in the form of *Shteevana* (sputum) and formation of *krimi* takes place. *Krimi* (microorganisms) could be *sthula* or *sukshma krimi*. So, larvae to microbes can be detected in *Shteevana* (sputum). *Aasyasravana* (*kapha samsrava*) is one of the symptoms of *shleshmika krimijanya upadrava* (a complication of *shleshmika krimi*)

DISCUSSION

Shteevana (sputum) refers to the substance coughed out from the lungs, bronchi, trachea and larynx. *Shteevana pariksha* (examination of sputum) plays an important role in diagnosis of systemic disorders like *pranavaha sroto vikara* (respiratory diseases). We can diagnose the disease and understand the prognosis of disease with help of *Shteevana pariksha* according to its colour, consistency, quantity etc. for example blood-tinged sputum can be compared with *sarakta shteevana* (blood-tinged sputum) which is seen in *urdhva raktapitta*, *nasagata rakta srava* etc. Therefore, with thorough *Shteevana pariksha* (examination of sputum) one can diagnose *Pranavaha* (respiratory diseases) and non *Pranavaha vikaras* (non-respiratory channel disorders).

CONCLUSION

There is no direct reference to *Shteevana pariksha* in our classics. We get a few references scattered in various contexts of *Samhitas*. Acharya Charaka in *Indriya Sthana* explained the prognosis of disease through the physical characteristics of *Shteevana*. *Saama Kapha Lakshanas* mentioned in classics are considered to be an important tool for *Shteevana*

Pariksha. With all the above discussion we can conclude *Shteevana Pariksha* has its importance in diagnosing both *Pranavaha* and non *Pranavaha vikaras*.

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