

A CONCEPTUAL STUDY OF SEMEN ANALYSIS & It's CO-RELATION WITH *SHUKRA-DUSHTI*

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ABSTRACT

In India, 10-15% of couples in the reproductive age group are estimated to be infertile. In those, 25% cases are of male infertility.^[1]

A detailed description of examination of the seminal fluid is available in the Ayurvedic classics. In practice, the terms *retas*, *sukra*, and *virya* to be vaguely used as a synonymous for semen. However, these words are to be meant for a specific purpose; that is to say, *shukra* denotes the whole testicular secretion comprising of sperms and male hormones; while *retas* denote the ejaculatory part and *Virya* denotes the androgens. It is observed that the modern method of semen analysis has low predictive power because of lack of technology to precisely assess the pregnancy inducing capability of the sperm and inherent variability in semen quantity & quality among the men. Also, it has

been commonly reported in the recent studies that men are showing good semen parameters and still not able to conceive after a long non protective relationship.^[2] Ayurveda gives prime importance to maintain good health as well as happiness.^[3] For happiness and harmony of life it is necessary to achieve all the goals of life. Progeny is the essential part of human life along with happiness. *Ayurveda* had explained *Klaibya*^[4], *Napunsaka* and *Shukra*^[5] dhatu dosha concepts which affecting to male infertility. For the assessment of morbidities in *shukra dhatu*, the *Retas Pareeksha*^[6] (Semen examination) is being used in world most ancient and rational system i.e. *Ayurveda*, described in *Charaka Samhita*.

KEYWORDS: *Retas Pareeksha*, *shukra dhatu*, *Napunsaka*, semen, infertility.

INTRODUCTION

Ayurveda is based on the *Tridosha* theory. This *tridosha* theory has widely been used to understand not just physiology of the body but also the pathologies. The pathological conditions of *Shukra* have been elaborated under the name *Shukra Dushti*. The examination of *retas* (semen) has been explained by *Charaka* under eight factors, whereas *Sushruta* has described different pathological conditions of semen. All the *Dusti laxanas* helps us to analysis of Semen (Table no.1).

Table No 1.

CHARAK		SUSHRUTA	
DOSHA	SHUKRADUSHTI	DOSHA	SHUKRADUSHTI
1. vata	Phenila	1. vata	Vataja
2. vata	Tanu	2. pitta	Pittaja
3. vata	Ruksha	3. kapha	Kaphaja
4. pitta	Vivarna	4. rakta	Kunapganghi
5. pitta	Puti	5. sleshmavata	Granthibhuta
6. kapha	Picchila	6. pittasleshma	Putipuya
7. rakta & etc.	Anya dhatu sansrushta	7. pittavata	Kshina
8. vatakapha	Avasadi	8. sannipata	Mitra purishagandhi

According to *Acharya Charaka* there are eight factors of semen which has to be examined. They are as follows-^[7]

1. *Phenila*.
2. *Puti*.
3. *Tanu*.
4. *Picchila*.
5. *Ruksha*.
6. *Anya dhatu samsrusta*;
7. *Vivarva*.
8. *Avasadi*.

1. **PHENILA:** *phenila* means frothy or that which contains froth. Froth is formed when surface tension of a liquid is lowered. Surfactants particles are responsible for lowering the surface tension. Surfactants, when present in the semen, they destroy the sperm structural membrane and hence sperms die due to leakage of internal vital cell structures. It may be said that one or many surfactants present in semen reason for quantifying the froth.

2. **TANU:** *Tanu* means thin or minuteness. Thinness /thickness of the semen is dependent on its sperm concentration present within it. The greater the sperm count, more the density. So by determining the sperm count, we may predict the *tanutva*.
3. **RUKSHA:** *Ruksha* means dryness or roughness. Sushruta says that it is ascertained by direct observation (su.sa. sha.41/15). Hemadri, while commenting on Ashtanga Hridaya1/18 says “Ruksha is that Guna which causes dryness”. It is difficult to demonstrate dryness physically in liquid, but it may be demonstrated pharmacologically. For example, action of kerosene, alkalis or detergents produces dryness over body parts. This is to that, if semen attains such property, it exerts high osmotic pressure on sperms and thus disturbs the function of sperms. On the basis of this increased alkalinity of semen (pH >8.5) can be taken as *Ruksha Shukradushti*.
4. **VIVARNA:** The normal color of *Shukra* is said to be *sphatikabha* (i.e. Alum like). This is grayish white & any deviation from this is said to be *vivarna*. The pathological color are said to be *Arunabh(radish)*, *krishnabh(blackish)*, *pittabh(yellowish)* and *shuklabh (milky white)*.
5. **PICCHILA:** This refers to sickness or viscosity (*Sushruta Sharirsthana* 41/15). *Sushruta* says that it can be ascertained by an observation and touch. The *picchilata* of Retas may be graded by measuring the viscosity of semen sample. Measuring the thread formed while glass rod is touched or while dropping the semen from the dropper achieves the purpose.
6. **PUTI:** *Puti* refers to putrid or pungent smell. Any semen sample giving offensive or putrifactory smell may be considered *Putigandhi Shukra*. Generally, *putigandhata* of semen may be seen in chronic suppurative conditions of genital track or infected semen samples.
7. **ANYA-DHATU-SANSRUSHTA:** Presence of non-spermatozoa cells [gelatinous bodies, mucous threads, macrophages, epithelial cells etc.] in the semen can be considered as *Anya-Dhatu-sanshrushta*. Among the above said, gelatinous body can be seen in the semen physically. Anti-sperm antibodies may be formed by agglutination, which in turn may be present as head to head, mid piece to mid piece or on non-specific on weight drop slide.

8. **AVASADI:** *Avasadi* means the property of sedimentation of a substance. Some unliquified or partially liquefied part of semen shows sedimentation. In normal conditions, the semen should mixed with distilled water. In certain conditions, the semen drop doesn't disperse and sinks to the bottom, and no discoloration of water occurs. Such samples may be called as *Avasadi*.

Conceptual Study to Understand the Physical and Biochemical Semen Characteristics

1. **Volume:** The normal volume of seminal fluid ranges between 2ml and 6ml per ejaculation.^[8] Any semen sample which measures below 1.5ml per ejaculation is termed as Hypospermia and which measures more than 6ml is termed as Hyperspermia. Hypospermia is one condition where there is reduced semen volume, may be because of the predominance of *vata dosha* resulting in *vataja shukra dushti*. If an individual is not able to produce any traceable amount of seminal fluid, then the condition is termed as Aspermia (absolute absence of semen) again because of vitiated *vata*.
2. **Pus Cells and Puti Gandha (foul smell)** - It is perceived through *Ghranendriya* (nose). *Ayurveda* speaks about three types of *Gandha*. Normal *Shukra* has *Madhu gandha* (smell of honey), *Pitta Dooshita* has *Puti Gandha* (with foul smell) and *Kapha dooshita* has *Visra gandha* whereas *Puti* is due to *Pittaja Shukra Dushti*. Inflammatory conditions lead to the secretion of pus. Pus has an odor because it contains anaerobic bacteria, which prefer deoxygenated environment. The bacteria produce some Sulphur compounds, which have a strong odor.
3. **Colour** - It is correlated with the *Varna* and is perceived through *Chakshu* (visual perception). In naked eye, normal semen is considered to be greyish white or white in colour. Semen is yellowish in jaundice patients and reddish brown when it is associated with blood.^[9] *Prakruta Shukra* (normal semen) is *Sphatikabha* or *Shukla* (white). Based on *Prakruti*, it can be of the color of *Taila* in *Vata prakriti*, *Gruta* in *Pitta* or *Madhu* (honey) in *Kapha*. Vitiated *Shukra* is also discolored.
4. **Liquefaction Time and Appearance** - It is correlated with the appearance told in the *Ayurvedic* classics. *Sphatikabha* is when liquefaction time is normal and *Gratita Shukra* shows prolonged liquefaction time. Normally semen liquefies within 15-20 min of ejaculation but can take up to one hour to liquefy. Liquefaction of semen is due to coagulating proteins originate within the seminal vesicles and coagulating enzymes are

derived from the prostate gland. Absence of coagulation indicates ejaculatory duct obstruction or congenital absence of seminal vesicles. Prolonged liquefaction time is due to poor prostatic secretion.

5. **Viscosity and *pichchilata*** - *Pichchila* is the property of a substance to stick also said as slimy, lubricous, slippery, smeary etc. Viscosity on the other hand is the resistance offered by the liquid to flow. The liquid does not flow due to its stickiness. The molecules of the liquid bind with one another and to the surface and resist to flow. Viscosity is termed as normal or abnormal based on liquefaction time. *Ayurvedic* parameters of viscosity are *Apichchila* (non-viscous), *Tailabha* (oil like), *Gritabha* (ghee like), *Madhwabha* (honey like) and *Atipichchila* (highly viscous).
6. ***Ruksha*** - High Alkaline pH correlates with *Ruksha Shukra dushti*. Acidic pH indicates *dushti* by *Pitta* and alkaline pH indicates *dushti* by *Vata*. *Ruksha* is one of the *Atma-Gunas* (base quality) of *Vata* and hence high alkaline pH can be taken as *Apichchila* (*Ruksha*). In high alkaline pH, semen loses its buffering capacity in cervical media.
7. ***Atipichchila*** – *Ati-pichilatva* is hyper-viscosity of semen which is responsible for impaired motility. *Picchilata* is the property of binding. *Charaka Samhita* has quoted this pathology as “*Shleshmanam Baddhamarga*”. It indicates *Shukravaha Srotas Avarodha* (the impairment in the motility of spermatozoa). After ejaculation, further progression of Spermatozoa is hampered due to obstruction in reproductive path of male genital tract.
8. **Semen consistency and sperm count** - Consistency is the degree of firmness.^[10] In *Ayurveda*, with respect to *Shukra*, it can be expressed in terms of *Tanu*, *Drava*, *Sandra* and *Grantibhuta*. Consistency of semen is examined after complete liquefaction of semen.
9. ***Tanu*** - It is a feature of *Vataja Shukra dushti* & this is the condition in which semen is translucent or transparent. This is due to diminished nutritional value of seminal plasma as well as diminished concentration of Spermatozoa in seminal fluid. This condition can correlate with Oligospermia.
10. ***Drava* / *Sandra*** - These are *Shuddha Shukra Lakshana* (qualities of pure semen). The *Shukra* which is clear is considered to be *Drava*. After complete liquefaction there may be some granules present in the semen, and that is considered as *Sandra*.

- 11. *Granthij Shukradushti*** - Agglutination of semen can be taken as *Granthibhut Shukra*. It is due to *Kapha Dushti*.
- 12. Fructose test and *madurata* (sweetness)** - Presence of fructose shows *Madhurata* of the semen which is one of the characteristics of *Shuddha Shukra*. Acidic pH generally correlates with absence of fructose. Here quality of seminal fluid will be altered, which will lead to lack of nutrients to spermatozoa. This condition will hamper forward progression of spermatozoa.^[11]
- 13. *Avasaadi* and *Necrozoospermia*** - It is due to *Vataja Shukra Dushti*. The dictionaries give its meaning as *Vinashyaa* (destroyed), *Swakarma Akshamatva* (non-functional).^[12] Hence it can be taken as *necrozoospermia*.
- 14. *Vedhana* (Pain)** - It is assessed through *Prashna Pareeksha* (interrogation). It can be *Ruja* (Pain), *Daha* (Burning sensation), *Kandu* (Itching).
- 15. Other cells (Pus Cells, epithelial cells, bacterial cells and Red Blood cells):** Presence of pus and other cells in the semen sample can be a result of any inflammation or infection in the genitor-urinary system. This can be a result of conditions like epididymitis, TB of the genitals, orchitis, prostaticitis, hydrocele, varicocele, filariasis, etc. These findings can be understood as *Anya-dhatu sanshrushta shukra*.

DISCUSSION

The physical and biochemical changes found in the semen analysis attributed to a specific combination of *dosha* always presents with features similar to the *dosha* involved. For example,

The next two doshas i.e. *Putigandha* and *Vivarna*, are by *dushti* of *sukra* by the vitiated *pitta*. This *retas* causes burning sensation on ejaculation is hot to touch.

The *Picchila dosha* is caused by *kapha* affecting the *retas*. Injury to *shukravaha strotas* due to excessive sexual activity, trauma etc. will cause the condition of *Putishukra*.

Due to *vega-dharana* vitiated *vayu* blocks the path of *retas*, it ejaculated with difficulty this is the *Avasadi dosha* of *retas*. These *doshas* of *retas* or *shukra dosha* causes disease, which is named as a *klaibya*.

CONCLUSION

It is very important us to know the proper assessment of physical and biochemical features of semen in semen analysis, and then physician can understand the *dosha* involved in the pathology better. Thus, it becomes easier & logical for a doctors to plan treatment after knowing the *dosha* affecting *Shukra Dhatu* resulting in *Shukra Dushti*.

After a close observation, a highly significant association was found between *Varna* and color, *Pichchilata* and viscosity, pus cells and Puti *Gandha*, consistency of *Shukra* and sperm count, liquefaction time and appearance. The *Ayurvedic* parameters of *Shukra Pareeksha* are valid even today and can be correlated with the components of semen analysis.

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