

AN ETIOPATHOLOGICAL DIAGNOSTIC STUDY ON SHUKRA DUSTI TO ASSESS OLIGO-ASTHENOSPERMIA THROUGH SEMEN ANALYSIS

^{1*}Dr. Rakesh H. K., ²Dr. A. S. Patil, ³Dr. Shiva Prasad S. E.

¹Post Graduate Scholar, Department of Roga Nidana, Government Ayurveda Medical College, Bengaluru, Karnataka.

²Professor and HOD, Department of Roga Nidana, Government Ayurveda Medical College, Bengaluru, Karnataka.

³Assistant Professor, Department of Roga Nidana, Government Ayurveda Medical College, Bengaluru, Karnataka.

Article Received on 07 Nov. 2025,
Article Revised on 27 Nov. 2025,
Article Published on 01 Dec. 2025,
<https://doi.org/10.5281/zenodo.17789873>

*Corresponding Author

Dr. Rakesh H. K.

Post Graduate Scholar, Department of
Roga Nidana, Government Ayurveda
Medical College, Bengaluru,
Karnataka.



How to cite this Article: 1*Dr. Rakesh H. K.,
2Dr. A. S. Patil, 3Dr. Shiva Prasad S. E. (2025)
An Etiopathological Diagnostic Study On
Shukra Dusti To Assess Oligo-Asthenospermia
Through Semen Analysis. World Journal of
Pharmaceutical Research, 14(23), 1076–1097.
This work is licensed under Creative Commons
Attribution 4.0 International license.

ABSTRACT

Shukra is one among the *Sapta Dhatus*, that which present all over body and its main function is 'Garbha Utpatti'. Any abnormality leads to *Shukravahasrotodusti* and causes *Nispraja*, *Garbha Vikruti*, *Aharshana* and *Klaibya*.^[1] All the *Bruhatrayis* explained about *Astavidha Shukra Dusti*, its *Lakshanas* and *Doshic* relation. Due to *Aharaja*, *Viharaja*, *Manasika*, *Vaidyakrita* and *Abhigataja Nidanas*, *Dosha's* alone or in combine reaches *Shukravaha Siras*, there they affect *Shukra* quickly and results in *Astavidhashukra Dusti* acc to respective *Doshas*. In *Charaka Samhita* it is mentioned, *Phenila Tanu Rooksha Vivarna Pooti Pichilam Anyadhatuupasamsrustam Avasadi* as *Astavidhashukra Dusti*.^[2] where in *Sushruta Samhita* and *Astanga Hridaya* it is mentioned as, *Vata Pitta Sleshma Kunapagandi Granti Pootipuya Ksheena Mutrapureesharetas* as *Astavidha Shukra Dusti*.^[3] Oligospermia is reduced sperm count less than 15 million / ml of semen. Asthenospermia is reduced sperm

motility less than 40% including progressive and non-progressive sperm. In today generation because of altered life style, unhealthy food, intoxications and stressful work people are more

prone to suffer from abnormality of male reproductive system. **Aim:** The aim of study to know etiopathogenesis of *Shukra Dusti* and to assess oligo-asthenospermia in *Shukra Dusti* subjects. **Methodology:** This research utilized observational study. Data collection was conducted using case proforma. **Results:** Oligospermia and oligoasthenospermia were major findings in the subjects of *Vataja Shukra Dusti*. In *Pittaja Shukra Dusti*, asthenospermia was a major finding, followed by oligoasthenospermia. In *Kaphaja Shukra Dusti*, asthenospermia was a major finding.

KEYWORDS: *Shukra Dusti*, Oligo-asthenospermia, Semen analysis etc.

INTRODUCTION

Ayurveda is good old medical science, originated from Brahma only for the welfare of mankind. Among *Astanga Ayurveda*, *Vajikarana* is one such branch that promotes *Shukra Dusti Chikitsa* and *Sadyo Praharshana*^[4], i.e., virility. *Acharya Charaka* gives a detailed explanation that *Vajikarana* is for *Apatya Santanakara*, which means for the sake of healthy progeny for him and his son also. And for having sexual vigor like horse and having good *Shukra Dhatu* without depletion. One who is having more children and grandchildren will be respected, famed, and worshiped in *Paraloka* also.^[5] For continuity of generation progeny will be of utmost importance.

The combination of *Shukra* and *Shonita* with *Jeevatma* is *Garbha*. *Shukra* is one among the *Sapta Dhatu* and is produced last, so it is considered the essence of all *Dhatu*. Its function is *Deha Dharana* and *Garbhotpadana*. *Shukra* is considered as *Pumbeeja*. If seed quality is not good, it won't help in plant growth; likewise, *Dusta Shukra* won't help in *Garbha Utpatti*. Due to *Astamya Ahara Vihara*, *Akalayonigamana*, *Shukra Veganigrahana*, *Atimaituna*, and *Shastra*, *Kshara*, *Agni*, *Shukravaha Sroto Dusti* results. Based on appearance, *Acharya Charaka* classified *Shukra Dusti* into eight types, while *Acharya Sushruta* and *Vagbhata* classified it based on *Dosha* involvement into eight types.

In Ayurveda utmost importance is given to *Roga Pareeksha* before the implication of *Chikitsa*. The concept of *Nidana Panchaka* is very important to know the causative factor of disease, signs and symptoms, and to understand pathogenesis. In Ayurveda, *Shukra Dusti* can be identified by *Pratyaksha*, *Anumana*, and *Aptopadesha*. In modern science semen analysis is the basic investigation to know seminal parameters.

Nowadays, because of modern lifestyle, improper diet, not following celibacy in student life, illicit relationships, and not consuming aphrodisiacs, the male population is suffering from male sexual dysfunctions like premature ejaculation, erectile dysfunction, low libido, and male factor infertility. Especially male factors alone cause 40-50% of cases of infertility. Oligo-asthenospermia is one of the main conditions seen in male factor infertility. Various factors are responsible for low sperm count and decreased motility. It may include problems in sperm production or in the transport of sperm, may be due to male sexual dysfunction in performing coitus, may be due to hormonal problems, and may also be sperm antibodies. Other than these, exposure to drugs, chemicals, alcohol, and smoking has a direct impact on spermatogenesis. In present time in the competitive world, people are getting married late, after 30 years, and suffering from some sort of stress also.

The primary objective of this study is to understand the etiology of *Shukra Dusti*, to study the *Samprapti*, to know *Shukra Dusti* from the Ayurvedic and modern points of view, and to assess the oligo-asthenospermia from the subjects of *Shukra Dusti*. To evaluate *Dosha* from *Shukra Dusti* with the help of semen analysis and its significance in adopting treatment.

OBJECTIVES OF THE STUDY

1. To Study the etiopathogenesis of *Shukra Dusti*.
2. To analyse *Shukra Dusti* through semen analysis.
3. To assess Oligo-asthenospermia in *Shukra Dusti* subjects.

METHODOLOGY

A minimum of 100 subjects suffering *Shukra Dusti* from will be selected for the study in simple random sampling method. A special pro forma will be prepared which includes detailed history taking, physical signs and symptoms as mentioned in our classics. Patients will be clinically examined, analyzed and selected accordingly.

INCLUSION CRITERIA

- Male patients between the age group of 22-50years.
- Patients fulfilling the *Lakshanas* of *Shukra Dusti* and diagnostic criteria.

EXCLUSION CRITERIA

- Patients with congenital male reproductive system disorders, HIV, Syphilis and other STD's.

- Patients suffering from systemic diseases like tuberculosis and Malignant conditions etc.

RESULTS

The observed data were recorded in a well-designed case proforma.

Total observed data and results are divided in two sections as

- Demographic data
- Data related to Disease

Table No 01: Distribution of Patients According To Age.

Age group	Frequency	Percentage
20-30	26	26%
31-40	55	55%
41-50	19	19%

Table No 02: Distribution of Patients According To Occupation.

Occupation	Frequency	Percentage
Business	24	24%
Agriculture	10	10%
IT Field	21	21%
Teaching Field	09	9%
Laborious	36	36%

Table No 03: Distribution of Patients According To Vyasana.

Vyasana	Frequency	Percentage
Smoking	26	26%
Alcohol	15	15%
Smoking and alcohol	33	33%
Tobacco	05	5%
Nil	21	21%

Table No 04: Distribution of Patients According To Satva.

Satva	No of Patients	Percentage
Pravara	20	20%
Madhyama	62	62%
Avara	18	18%

Table No 05: Distribution of Patient According to Shukravaha Srotodusti.

Sroto Dusti	No of Patients	Percentage
Present	42	42%
Absent	58	58%

Table No 06: Distribution of Patient According to *Aharaja Nidana*.

<i>Aharaja Nidana</i>	No of Patients	Percentage
<i>Atiruksha sevana</i>	60	60
<i>Atitikta</i>	34	34
<i>Atikashaya</i>	30	30
<i>Atilavana</i>	58	58
<i>Atiamla</i>	45	45
<i>Atiushna</i>	56	56

Table No 07: Distribution of Patient According To *Viharaja Nidhana*.

<i>Viharaja Nidana</i>	No of Patients	Percentage
<i>Ativyavaya</i>	35	35%
<i>Ativyayama</i>	28	28%
<i>Asatmya sevana</i>	28	28%
<i>Akala maituna</i>	45	45%
<i>Ayoni maituna</i>	62	62%
<i>Amaituna</i>	15	15%
<i>Vegadharana</i>	12	12%

Table No 08: Distribution Of Patient According To *Manasika Nidhana*.

<i>Manasika Nidana</i>	No of Patients	Percentage
<i>Chinta</i>	45	45%
<i>Shoka</i>	38	38%
<i>Avishrambha</i>	35	35%
<i>Vibhrama</i>	20	20%
<i>Bhaya</i>	42	42%
<i>Krodha</i>	28	28%
<i>Abhichara</i>	2	2%

Table No 09: Distribution Of Patient According To *Anya Nidana*.

<i>Anya Nidana</i>	No of Patients	Percentage
<i>Vaidykruta</i>	4	4%
<i>Nareenamarasagynana</i>	2	2%
<i>Gamanajaraya</i>	1	1%
<i>Vyadhi karshita</i>	18	18%
<i>Dhatu pradushanat</i>	33	33%

Table No 10: Distribution Of Patient According To *Shukra Dusti Lakshana*.

<i>Rupa</i>	No of Patients	Percentage
<i>Phenila</i>	3	3%
<i>Tanu</i>	19	19%
<i>Rooksha</i>	17	17%
<i>Vivarna</i>	8	8%
<i>Pooti Gandha</i>	8	8%
<i>Pichila</i>	17	17%

<i>Anyadhatusamsruta</i>	0	0%
<i>Avasadi</i>	6	6%
<i>Tanu & Rooksha</i>	18	18%
<i>Vaivarnya, Pooti ganda</i>	4	4%

Table No 11: Distribution of Patient According To Liquefaction Time.

Liquefaction time	No of Patients	Percentage
Less than 15 mins	22	22%
15-30 mins	56	56%
30-60 mins	10	10%
More than 60 mins	12	12%

Table No 12: Distribution Of Patient According to Volume Of Semen.

VOLUME	No of Patients	Percentage
0.1 to 1.5 ml	17	17%
1.6 to 3 ml	77	77%
3.1 to 6 ml	06	6%

Table No 13: Distribution Of Patient According To Viscosity.

Viscosity	No of Patients	Percentage
Normal	56	56%
Hypo viscosity	26	26%
Hyper viscosity	18	18%

Table No 14: Distribution of Patient According To Appearance.

Appearance	No of Patients	Percentage
Normal	88	88%
Abnormal	12	12%

Table No 15: Distribution Of Patient According To Odour.

Odour	No of Patients	Percentage
Normal	88	88%
Abnormal	12	12%

Table No 16: Distribution of Patient According To Ph Of Semen.

pH OF SEMEN	No of Patients	Percentage
< 7.2	4	4%
7.2 to 7.4	59	59%
7.4 to 8.0	26	26%
>8.0	11	11%

Table No 17: Distribution Of Patient According To Investigation Findings.

Findings	No of Patients	Percentage
Oligospermia	17	17%
Asthenospermia	25	25%
Oligo-Asthenospermia	29	29%
Normal	29	29%

Table No 18: Distribution of Patient According To *Shukra Dusti* And Investigation Findings.

SHUKRA DUSTI	Oligospermia	Asthenospermia	Oligoasthenospermia	Normal count and motility
Phenila	1%	0	2%	0
Tanu	10%	1%	4%	4%
Rooksha	2%	2%	8%	5%
Vivarna	0	3%	0	5%
Putiganda	0	4%	0	4%
Pichila	0	10%	1%	6%
Avasadi	0	2%	1%	3%
Tanu&Rooksha	4%	2%	10%	2%
Vivarna&puti	0	1%	3%	0

DISCUSSION

Shukra is one among the *Sapta Dhatu*^[6] present all over the body. The factor, which is responsible for the formation of ‘*Garbha*’ (embryo), is known as *Shukra*.^[7] All *Brihatrayis* explained about *Shukra Dusti*. *Acharya Charaka* mentioned *Reta Dosha* in *Sutra Sthana* and *Asta Vidha Shukra Dusti* in *Chikitsa Sthana*. “*Retodoshas*” are explained as *Tanu*, *Phenila*, *Puti*, *Atipichchila*, *Anyā Dhatu Samsrista*, *Avasaadi*, *Shushka*, and *Ashveta*, but in *Chikitsasthana*, he mentions *Shukra Dushti*, and in place of *Shushka* and *Ashveta*, *Ruksha* and *Vivarna* are explained. Among 8 conditions, *Acharya Charaka* is again classified according to *Dosha*. He included *Phenila*, *Tanu*, and *Rooksha* under *Vata Dosha*. He further told the *Vata Dushita Shukra* that it will be ejaculated with pain in low volume and won’t cause *Garbha Utpatti*.^[8] *Vivarna* and *Pooti Gandha* under *Pitta Dosha*: in this, ejaculated *Shukra* will be *Ushna* in nature, and there will be a burning sensation during ejaculation.^[9] *Pichila Shukra Dusti* is due to *Kapha Dosha*; in that, obstruction for ejaculation will be present.^[10] *Anyadhatusamsruta* caused by excessive sexual intercourse, *Abhighata*, and *Kshata*^[11]: the *Shukra* will be mixed with blood. *Avasadi Shukra Dusti* occurred due to *Shukra Vega Sandharana*^[12]; it will be in *Gratitha* form. Here, the *Avasadi* type of *Shukra* will sink down in water if placed on the water surface.

DISCUSSIONON DEMOGRAPHIC DATA

Age: In the present study of 100 patients of *Shukra Dushti*, the highest incidence was observed in the 31–40 years age group (55%), followed by the 20–30 years group (26%), while patients in the 41–50 years group constituted 19%. This indicates that *Shukra Dusti* is more common in the reproductive and active age group (20–40 years), where middle age lifestyle, stress due to work plays a major role. According to *Grhastha Asrama Dharma*, age between 25–50 years is meant for marriage, family life, and progeny. The right age for a man to marry is around 25 years, and the ideal age to beget children is 25–30 years. In the present era, due to westernization and lifestyle changes, the traditional concept of *Brahmacharya* is not being followed. Early indulgence in excessive sexual activities, including frequent masturbation, leads to *Shukra Dusti* as mentioned in classics. Even delayed marriage due to education, career, and social reasons has become common nowadays. This postponement results in reduced reproductive capacity after 35 years of age, with advancing age the sperm count, motility, and quality gradually decline, leading to male factor infertility. In older age, *Shukra Dusti* occurs due to *Vyadi Karshita*, *Dhatukshaya* and lack of *Vajikarana* therapy. Sexual dysfunction is more commonly observed in men over 40 years of age. With advancing age, a natural decline in testosterone levels leads to several changes in sexual function.

Marital Status: The present study included 100 patients; a majority of the patients were married (74%), while 20% were unmarried and 6% were divorced. The high percentage of married individuals reflects the *Shukra Dusti*, causing fertility issues and sexual dysfunction in married couples. In unmarried group, by excessive masturbation, smoking etc majority of patients suffering from either premature ejaculation, erectile dysfunction and variation in sperm quantity and quality, causing delay of marriage also due to fear of impaired sexual performance. The divorced population highlights the possible relationship dynamics or reproductive challenges to marital stability.

Occupation: In the present study, majority of population in labour-intensive work (36%), followed by business (24%), IT-related jobs (21%), agriculture (10%), and teaching professions (9%). The predominance of laborious occupations suggests *Ativyayama*, *Chinta* which can negatively impact sexual health. In business group and Professionals in IT sectors have sedentary lifestyles and increased job stress and irregular routines, causing *Shukra Dusti* and impairing sexual health. Agricultural workers, may face additional risks due to exposure to chemicals and pesticides, which have been shown to impair sperm count and motility.

Desha: In the present study, a majority of patients belonged to *Sadharana Desha* about 87%, for *Jangala Desha* about 8% and *Anupa Desha* about 5% were represented. High incidence seen in *Sadharana Desha*, as study conducted in *Sadharana Desha* only. The type of *Desha* influences on *Shukra dhatu*. *Jangala Desha*, due to its *Agneya Guna*, causes *Shukra Kshaya* minimally, whereas *Anupa Desha*, due to its *Saumya Guna*, nourishes *Shukra Dhatu*. *Sadharana Desha* has a normal effect on *Shukra Dhatu*. So, in present study *Shukra Dusti* due to *Aharaaja*, *Viharaaja* & *Anya Nidhana*, *Desha* had minimal effect.

Agni: In the present study, 16% of the patients were found to have *Mandaagni*, 30% had *Vishamaagni*, 11% had *Tikṣṇaagni*, and 43% exhibited *Samaagni* type of *Agni*. These are *Prakrita Agni* constituents among the 100 samples. *Agnimandya* is *Vikrita* in nature causing *Shukra Dhatvagni Mandya*. *Dhatvagni* is form of *Jataragni* only, *Prakrita Dhatvagni* requires for *Shukra Dhatu Utpatti* from *Majja Dhatu*. *Agni* in body does various physiological process, so *Shukra Dhatvagni* responsible for spermatogenesis and maturation process. According to *Astanga Sangraha*, *Samana Vayu* which is present in *Agni Sthana* and does *Agni Sandushana*, which also acts on *Shukravaha Srotas*.

Vyasana: In the present study, 33% of patients reported both smoking and alcohol consumption, 26% were only smokers, and 17% were consumed alcohol, and 5% used tobacco, while 21% had no such habits. Majority of patients had habit of alcohol and smoking consumption, which is *Ruksha*, *Ushna*, *Teeksha Guna* in nature, these *Gunas* are opposite to *Shukra Gunas* and also does the *Prakopa* of *Vata* and *Pitta Doshas*. Smoking and alcohol impair spermatogenesis by inducing oxidative stress, toxicity, hormonal imbalance results in low sperm count, reduced motility, abnormal morphology and increases DNA fragmentation also.

Prakriti: In this study, about 4% of patients belonged to *Vata Prakriti*, 3% to *Pitta Prakriti*, 2% to *Kapha Prakriti*, 42% to *Vata-Pitta Prakriti*, 21% to *Pitta-Kapha Prakriti*, and 28% to *Vata-Kapha Prakriti*. High incidence is *Vatapitta Prakriti* having *Shukra Dusti*. By *Prakriti* only *Vata Prakriti* people naturally have *Alpabala*, *Alpa Apatya*^[13] whereas *Pittala Prakriti* has *Madhyama Bala*^[14] and *Shleshma Prakriti* has *Uttama Bala*.^[15] In the present study high incidence seen in *Vatapitta Prakriti*, this indicates *Vatapitta* type are more prone to *Shukra Dusti*.

Satva: In this study, 20% of the patients belonged to *Pravara Satva*, 62% to *Madhyama Satva* and 18% to *Avara Satva*. High incidence seen in *Madhyama Satva* and followed by *Avara Satva*. *Satva* is very importance has impact on diagnosis of disease. *Avara Satva* persons take small disease as more dangerous which further increases stress. In *Shukra Dusti Manasika Nidana* play major role, so *Avara* and *Madhyama Satva* people are more prone to suffer from *Shukra Dusti*. Most of male sexual dysfunction like premature ejaculation, erectile dysfunction is in psychological in origin where *Satva* plays major role. *Mana Sankalpa*, *Soumanasa* and *Harsha* is important factor for *Maithuna Karma*. *Alpa Satva* persons are always having *Chinta*, *Shoka*, *Moha*^[16] etc.

DISCUSSION ON SEXUAL HISTORY

Awareness of sex education: In this study, 48% of the patients had good awareness on sex education, 43% had average awareness and 9% had poor awareness of sex education. Majority had good and average awareness of sex education. Sex education is important to physical, emotional and social well-being. Educating and counselling is importance for couples facing fertility issues and person suffering from male sexual dysfunction. Sex education is so much needed to avoid sexually transmitted disease also. In Ayurveda, the *Brahmacharya* is one among *Trayoupastambha*. *Brahmacharya* means not only celibacy, the right way of married man in sexual life is also a *Brahmacharya*. After *Maithuna Karma* one should take bath immediately, consume either milk or *Mamsa Rasa* and should go for good sleep.^[17] So that the *Shukra* will produce immediate again in body. Under the heading *Brahmacharya*, *Acharya Vagbhata* explained *Maithuna Karma* according to *Rutu*, *Maithuna Nishidha Kala*, *Maithuna Anarha Stree* and importance of *Shukra*.^[18]

Masturbation history: In the present study, 57% of patients reported a history of masturbation, while 43% did not. More than half of patients had a history of masturbation. An early age, specifically under 16 years, can lead to an addiction to masturbation. In that early age, *Dhatus* will be in the *Aparipakvadhatu Avasta*, the incomplete formation of body tissues. Excess masturbation causes *Shukra Dhatu Kshaya*, *Bala Kshaya*, and *Vata Prakopa*, which also cause psychological issues related to stress. It may result in overexcitement, premature ejaculation, erectile dysfunction, and oligoasthenospermia.

Shukravaha Srotodusti: In this study, about 42% of the patients had *Klaibya & Aharshana*, 58 % had no *Sroto Dusti Lakshana*. Majority has shown incidence of *Shukravaha Sroto Dusti*

Lakshanas as *Klaibya* and *Aharshana*, while remaining has no such *Lakshanas*. *Sroto Dusti* is important factor in *Samprapti* of *Shukra Dusti*.

Aharaja Nidana: In the present study, *Aharaja Nidanas* were observed with considerable variation. *Atiruksha Sevana* was most predominant (60%), followed by *Atilavana* (58%) and *Atiushna* (56%), *Atiamla* was noted in 45% of patients indicates that excess intake of dry, salty, sour and pungent food hampers *Shukra Dhatu* by vitiating *Vata* and *Pitta Doshas*. *Atitikta* (34%) and *Atikashaya* (30%) were also causes *Shukra Dusti* due to *Vata Prakopa*. *Ati Rooksha* was found predominantly. *Rooksha* means *Shoshana*^[19]; it causes dryness in *Shareera*. *Shukra* is *Snigdha Guna Dhatu*; when you take excess *Rooksha Ahara*, it will cause *Vata Prakopa* and also cause *Shushkata* in *Shukra Dhatu* and pain during ejaculation also. *Atilavana Ahara* causes *Pitta* and *Kapha Dusti*, *Rakta Dusti*, *Dhatu Shitilatha* and *Shukra Nasha*.^[20] Similarly, *Amla*, *Katu Rasa Ahara* has *Shukrahara* property. In the present study, the patients were more habituated to take *Rooksha Ahara* and less consumption of ghee, milk etc. *Acharya Charaka* mentions *Ahara* which is *Snigda*, *Madhura*, *Bruhmana*, *Jevaniya* are *Vrushya* in nature.^[21] For a normal *Shukra Dhatu* and to stay *Balavan* one should take *Vajikarana Dravya*, *Shukra Vruidikara Ahara* atleast.

Viharaja Nidana: In the present study, *Viharaja Nidanas* were found to be significant contributors to *Shukra Dusti*. *Ativyavaya* was reported in 35% of patients, indicating the harmful effects of excessive sexual indulgence on *Shukra Dhatu* depletion and *Vata Prakopa*. According to ayurveda, one should engage in *Maithuna* once in 15 days during summer period. If out of passion, if engaged in more it causes *Dhatu Kshaya*. *Ayoni Maithuna* (62%) and *Asatmya Sevana* (28%) were also highly prevalent, showing the adverse impact of unnatural and incompatible practices. *Akala Maithuna* was observed in 45% cases, it means indulge in sex, where time is contraindicated for *Maithuna* and doing sexual intercourse in very young age and old age also. *Ativyayama* (28%), *Amaithuna* (15%), and *Vegadharana* (12%) causes *Vata Prakopa* and *Shukra Dhatu Kshaya*. *Shukra Dusti* is also observed in patients of *Amaithuna* & *Shukra Vegadharana* i.e., those who are married and staying away from family or divorced and controlling urges are prone to suffer from *Shukra Dusti*. *Shukra Vegadharana* is one of the *Adharaniya Vega* i.e., it should not be suppressed. *Shukra Vegadharana* results in *Shandatva*^[22] and causes pain in testis, penis, epigastric region and obstruction to urine.^[23] *Ativyavaya* results in low semen and sperm count and *Amaithuna* causes reduced motility.

Manasika Nidana: In the present study, *Chinta* (45%) was the most common psychological factor, followed closely by *Bhaya* (42%) and *Shoka* (38%), indicating that excessive stress, fear, and grief significantly hamper reproductive health by disturbing *Mano Vaha Srotas* and aggravating *Vata Dosha*. *Chinta* causes *Rasadhatu Dusti*, this results in improper formation or depletion of successive next *Dhatu*, so *Shukra Dhatu Dusti* or *Kshaya* occurs. *Sankalpa*, a strong determination or ambition regarding sexual interaction or act with partner is important. Any defect in determination due to *Manasika Nidanas* impairs sexual activity and *Shukra* also. Stress elevates cortisol hormone; this elevated cortisol reduces gonadotropin-releasing hormone leading to decreased LH and FSH. This results in reduced testosterone hormone production, finally it impairs spermatogenesis process. Stress is one of the main causes for erectile dysfunction and premature ejaculation also. *Bhaya*, a state of chronic fear leads secretion of adrenaline, noradrenaline and cortisol, these impairs spermatogenesis and sexual function. Fear effects on sperm count and motility by increasing oxidative stress and DNA damage. It also creates fear and anxiety in performance results in erectile dysfunction, premature ejaculation and low libido. *Avishrambha* (35%) means no trust in oneself or in partner, it can lead to emotional distress, anxiety and reduced sexual confidence, over a period it disrupts hormonal balance, sexual function and reproductive health. *Krodha* was seen in 28% of cases, it increases *Pittavata Dosha* and *Rajo Guna* and frustration in sexual life. Calm mind is important for hormonal balance and good sexual performance. *Vibhrama* (20%) means unstable, confused state of mind it causes cortisol elevation and testosterone imbalance results in male sexual dysfunction conditions. *Abhichara* (2%) were less reported still rare cause seen. Acharya Charaka told ‘*Soumanasya Garbhadharana*^[24]’ i.e., balanced state of mind without impairment is most essential for fertilization. *Mana Sankalpa* is needed for initiation of *Maithuna Karma*, if someone suffering from any type of *Manasika Vyadi* or in during state of *Chinta*, *Krodha*, *Avishvasa*, *Bhaya* etc if he indulges in *Maithuna* leads to *Shukra Dusti*.^[25] So, one should be mental well before, free from any sort of tensions before engage in sexual activity.

Anya Nidana: In the present study, *Anya Nidanas* were also contributory factors for *Shukra Dusti*. Among them, *Dhatu Pradushanat* was most common (33%), *Shukra* being last *Dhatu* formed, normal *Dhatu Poshana* is need for *Shukra Dhatu Utpatti*, any derangement results in *Shukra Dusti*. *Vyadhi Karshita* was observed in 18% of cases, indicating persons suffering from chronic disease prone to *Shukra Dusti*. In this study, varicocele noted in 9% causing *Shukra Dusti*. Varicocele increases local temperature in testis causing reduction in sperm

count and motility. *Vaidyacruta* (4%) and *Nareenamarasajñana* (2%) were less reported. *Vaidyacruta* includes improper administration of *Shastra Karma*, *Kshara Karma* and *Agni Karma*. Any injury to testicular artery, vas deferens, testicular vessels cause damage to sperm production and transformation. *Kshara* had direct effect on *Shukra* due to *Ushna*, *Teekshna Guna*.^[26] Here *Agni* refers to *Agni Karma* and *Viharaja Agni*. Improper *Agni Karma* also effects on *Shukra Dusti*. *Viharaja Agni* includes *Atapa Sevana*, working in high temperature place. *Stree* told as *Uthama Vajeekarana Dravya*^[27], but if female partner is not having affection towards male partner, not interested in sexual life causes *Shukra Dusti* and male sexual dysfunction also.

Shukra Dusti Lakshana: In this study, among 100 patients, 3% had *Phenila*, 19% had *Tanu*, 17% had *Ruksha*, 8% had *Vivarṇa*, 8% had *Puti Gandha*, 17% had *Pichila*, 6% had *Avasadi*, 18% had a combination of *Tanu & Ruksha*, and 4% had *Vivarṇa & Puti Gandha* as *Rupa*.

Phenila: The *Shukra* which is frothy (*Phena*) in nature is called *Phenila Shukra* and it is due to *Vata Dosha* caused by *Laghu Guna* of *Vata*. It can be identified by physical examination of *Shukra*. semen sample looks like froth or foam with small bubbles.

Tanu: *Tanu* refers to *Alpa*, *Virala* i.e. scanty or less in quantity. *Tanu Shukra* is due to *Vata Dosha* vitiation. In *Shukra Dusti*, *Tanu Shukra* type can take as less volume, thin consistency and semen with low sperm concentration. *Tanu Shukra* examined by measuring volume, thin consistency understands by inspection, hypo-viscosity and reduced liquefaction time.

Rooksha: *Rooksha* means *Shoshana* and Commonly *Soshana* called as dryness, caused due to *Vruddi* of *Vata Dosha*. *Rooksha* is *Guna* of *Vata Dohsa*. This *Rookshata* in *Shukra* indicates *Vata Vruddhi* and loss of normal *Snigdha Guna* of semen. So, the *Rookshata* causes *Krichra* i.e pain during ejaculation. *Rookshata* can understand by loss of sliminess in semen and by alkaline pH of semen.

All these three *Phenila*, *Tanu* and *Rooksha* are comes under *Vata Dosha* and in these *Shukra Dusti*, *Shukra Pravriti* is like *Krichrena Alpa* i.e., ejaculation of less semen with difficulty and pain. Also told these *Vata Dosha Shukra Dusti* not results in *Garbha Utpatti*. Less volume, hypoviscosity, less liquefaction time, oligospermia and asthenospermia will be common findings.

Vivarna: *Vivarna* refers to discolored semen. *Shukra* will be either *Neela* or *Peeta Varna* due to *Pitta Prakopa*. *Vivarna Shukra* will be identified by the physical examination of the *Shukra*.

Puti Ganda: This *Shukra Dusti* refers to Semen with putrid or foul smell. It is caused by the *Pitta Dosha* vitiation. It can be examined by *Granendriya Pariksha* as *Visragandha*. The microscopic examination of semen may show the presence of pus cells.

In both *Vivarna* and *Puti Ganda* due to *Pitta Dosha* involvement, there will be burning sensation during ejaculation and semen will *Atiushna* in nature. Abnormal color and odour, asthenospermia and oligoasthenospermia will be common findings in *Pittaja Shukra Dusti*.

Pichila: *Pichila* means excessive sliminess. It can be understood by hyperviscosity of semen. In this variety semen will form thread like appearance if examined by glass rod. Liquefaction period of such semen is more than normal i.e., exceeds 60 minutes.

In *Kaphaja Shukra Dusti*, *Baddamarga* of *Shukra Pravrutti*, obstruction to ejaculation will be present. Hyper viscosity, increased liquefaction and asthenospermia will be common findings.

Anyashatupasamsrushta Shukra: In this type of *Shukra Dushti*, Semen mixed with other tissue elements seen. It will be *Rakta Mishrita* as a result of excessive sexual intercourse with women. It can be identified by microscopic examination where rbc, wbc's seen. In the present study no cases of *Anyashatupasamsrushta Shukra Dusti* seen.

Avasadhi Shukra Dushti: When one does *Shukra Vegdharana*, the semen gets obstructed in its course by the aggravated *Vayu*. The obstructed semen then becomes *Gratitha* (knotty) and *Avasadi*. It can be examined by sedimentation i.e., if semen placed over water it will sink to bottom of water. Ejaculated semen looks like clotted.

Liquefaction time: In this study, liquefaction time was less than 15 minutes in 22% of patients, between 15 and 30 minutes in 56%, between 30 and 60 minutes in 10%, and more than 60 minutes in 12% of patients. The majority of patients had normal liquefaction time. Increased liquefaction time is seen in *Kaphaja Shukra Dusti*, and decreased liquefaction time is observed in *Tanu & Phenila Shukra Dusti*. After ejaculation semen will be in coagulum form by action of fibrinogen released by seminal vesicle. Later, liquefaction of semen occurs

due to prostate-specific antigen and other proteolytic enzymes, such as seminin and fibrinolysin, secreted by the prostate gland. Usually liquefaction occurs in 20-30 mins; if it has not occurred, wait up to 60 mins. More than 60 minutes should be noted. Increased liquefaction indicated prostatic infection.

Volume of semen: In this study, semen volume was between 0.1 and 1.5 ml in 17% of patients, 1.6 and 3 ml in 77%, and 3.1 and 6 ml in 6% of patients. A high incidence of normal volume is observed in this study. Normal volume per ejaculation is 1.5 ml to 6 ml. Volume of semen contributed from secretions of seminal vesicles, accessory sex glands, and prostate gland. Hypo volume suggests problems in seminal vesicles, the prostate gland, retrograde ejaculation, and even in only one day of abstinence. High volume is seen in infection from seminal vesicles and the prostate gland. *Tanu Ithi Alpam*, i.e., less. So, *Tanu Shukra Dusti* can be taken as semen with low volume. It is mentioned as *Krichrena Alpa Shukra* under *Vata Dosha Shukra Dusti*, which means very little volume will be ejaculated with pain.

Viscosity of semen: In this study, semen viscosity was normal in 56% of patients, while 26% showed hypo-viscosity and 18% showed hyper-viscosity. High incidence of normal viscosity is seen. Hyper viscosity suggests seminal vesicle and prostate gland dysfunction; it can be seen in *Pichila Shukra* due to *Kapha*. Hypo viscosity or watery like appearance can be seen in *Tanu Shukra Dusti*.

Appearance: In this study among 100 patients, semen appearance was normal in 88% of patients, while 12% showed an abnormal appearance. Majority of patients normal color while few patients had yellowish discoloration due to *Pitta Dusti*. Normal color is Grey opalescent. Under *Vivarna Shukra Dusti Neela* or *Peeta Varna* is explained. In the present study only *Peeta Varna Shukra* is observed. Yellow discoloration of semen due to infection in prostate, seminal vesicles or pus cells in semen.

Odour: In this study among 100 patients, semen odour was normal in 88% of patients, while 12% showed an abnormal odour. Normal odour observed in the majority of patients. Normally semen has a bleach-like alkaline odour due to the presence of spermine secreted by the prostate gland. Putrid or foul smell due to infections. In *Ayurveda*, *Puti Ganda Shukra Dusti* occurs due to vitiated *Pitta Dosha*.

pH of semen: In this study among 100 patients, semen pH was slightly alkaline between 7.2-7.4 in 59% of patients, 26% showed a pH range of 7.4 to 8.0, 4% showed pH less than 7.2, while 11% had more alkaline pH. The majority of pH is secreted by seminal vesicles and a small amount from bulbourethral glands. Alkaline semen is much needed to neutralize the vaginal acidic nature. Optimal pH is required for motility of sperm, capacitation, and fertilization. Low pH suggests obstruction of seminal vesicles and ejaculatory duct obstruction. High pH is seen in genital tract infections. In the context of *Shukra Dusti*, increased pH, i.e., more than 8.0, is seen in the *Ruksha Shukra Dusti* condition.

Investigation findings: In the present study among 100 patients, the most common semen analysis finding was oligo-asthenospermia, i.e., low sperm count along with reduced motility, at about 29%, which is a major reason for male factor infertility. Asthenospermia, that is, motility less than 40%, including progressive and non-progressive sperm, is about 25% and was the next common finding, indicating the importance of motility in successful fertilization. Oligospermia, a sperm counts less than 15 million per ml, was observed in about 17% of this study. Interestingly, 29% of cases showed normal sperm count and sperm motility even though there is *Shukra Dusti*; this indicates that infertility in such cases may be due to male sexual dysfunction. *Klaibya* with normal sperm count and motility but with *Vikrita Shukra* is noted in those patients. It suggests in some cases sperm count and motility may be in the normal range, yet *Shukra Dusti* will be there due to *Dosha* involvement.

Shukra Dusti and investigation findings: In *Phenila Shukra Dusti* subjects, 1% of cases had oligospermia and 2% of cases had oligoasthenospermia. In *Tanu Shukra Dusti*, 10% of cases had oligospermia, 1% had asthenospermia, 4% had oligoasthenospermia, and 4% were among those with normal count and motility. In *Rooksha Shukra Dusti*, 2% of cases had oligospermia, 2% had asthenospermia, 8% had oligoasthenospermia, and 5% had normal count and motility. The combined *Tanu* and *Rooksha Shukra Dusti* type had 4% of oligospermia, 2% of asthenospermia, 10% of oligoasthenospermia, and 2% of normal count and motility as findings. The *Phenila*, *Tanu*, and *Rooksha Shukra* come under *Vataja Shukra Dusti*. *Vata Dosha* is of *Rooksha*, *Laghu Gunatmaka* and *Vayu*, *Akasha Mahabhootha Pradhana*. When *Vata* is aggravated and takes *Sthanasamshraya* in *Shukravaha Srotus*, it does the *Shoshana* of *Shukra Dhatu*. It may cause a degeneration process in seminiferous tubules, impairing spermatogenesis and causing oligospermia, and it may reduce secretions from glands, resulting in low-density semen and hypoviscous semen. By impairing *Chala*

Guna, it also causes asthenospermia. So macroscopically in *Vataja Shukra Dusti*, i.e., *Phenila*, *Tanu*, and *Rooksha Shukra*, semen will have less volume, less viscosity, and less liquefaction time, and microscopically, sperm cells are reduced in count (oligospermia) and motility (asthenospermia).

In *Vivarna* 3% had asthenospermia and 5% had normal count and motility. In *Putiganda Shukra Dusti* cases, 4% had asthenospermia and 4% had normal count and motility. The combined *Vivarna* and *Putiganda Shukra Dusti* type had 1% of asthenospermia and 3% of oligoasthenospermia as findings. *Vivarna* and *Putiganda* comes under *Pittaja Shukra Dusti*. *Pitta* having qualities of *Ushna*, *Teekshna*, *Visra*, *Katu*, *Amla guna* and *Agni & Jala Pradhana Mahabhootha*. When *Pitta Prakopa* occurs it causes *Daha*, *Paka*, *Durganda* and *Peetavabasa* in *Shareera*. Aggravated *Pitta* takes *Sthanasamsraya* in *Shukravaha Srotas*, causes *Peeta* or *Neela Varna* of *Shukra*, *Putiganda* of *Shukra*, *Atiushna* of *Shukra* and burning sensation during ejaculation. *Pitta* responsible for inflammation, discoloration, discharge, ripening of tissue. There will be *Pitta* involvement in all infection disease of male reproductive system like epididymitis, orchitis, prostatitis etc. Macroscopically in *Pittaja Shukra Dusti* i.e., *Vivarna* and *Putiganda Shukra Dusti*, semen will be having yellow or blue color, Putrid odour and microscopically sperm cells having reduced count (oligospermia) and reduced motility(asthenospermia), pus cells due to infection.

In *Pichila Shukra Dusti* 10% had asthenospermia, followed by 1% had oligoasthenospermia, and 6% had normal count and motility. *Kapha* has *Manda*, *Pichila Guna* by nature. If *Kaphavruddi* happens and takes *Sthanasamsraya* in *Shukravaha Srotas*, it causes *Atipichilata* of *Shukra* and *Baddhamarga* for ejaculation. By *Pichila Guna* the semen will become more viscous and takes more time for liquefaction, it impairs sperm active motility. By *Manda Guna* it hampers *Chalatva* of sperm resulting in Asthenospermia. Macroscopically in *Kaphaja Shukra Dusti* i.e., *Pichila Shukra Dusti*, semen will be in normal volume, hyper viscosity, increased liquefaction time, thick white color and microscopically sperm having reduced motility(ashtenospermia).

Avasadi Shukra Dusti had 2% of asthenospermia, 1% of oligoasthenospermia, and 3% of normal count and motility findings. Due to *Shukra Vegadharana*, the *Vata* will increases and obstructed semen will be dried by *Vata*, becomes *Gratita*(clotted mass). This *Avasadi Shukra* will cause pain and discomfort during ejaculation. The semen will sink in water easily.

Macroscopically semen will look like dried, clot masses and microscopically sperm may have reduced count and motility.

In the present study any cases of *Anydhatusamsruta Shukra Dusti* seen.

About 29% cases of *Shukra Dusti*, the normal sperm count and motility is reported, it suggests even though *Shukra Dusti* present, there may be chances of sperm count and motility are just in normal range according WHO criteria.

CONCLUSION

- ❖ In the present study, the age group between 30 and 40 years showed a higher prevalence of *Shukra Dusti*.
- ❖ In the present study, patients with a history of smoking and alcohol consumption showed a higher prevalence of *Shukra Dusti*, along with the influence of another *Ahara*, *Vihara*, and *Manasika Nidanas*.
- ❖ Among *Aharaja Nidhana*, *Atirooksha* and *Atilavana Ahara* were the predominant *Nidana* noted in this study.
- ❖ In the present study, *Manasika Nidanas* such as like *Chinta*, *Bhaya*, and *Shoka*, were found to be more prevalent. Elevated cortisol hormone due to *Manasika Nidanas* suppress testosterone levels and hampers spermatogenesis, ultimately resulting in oligoasthenospermia.
- ❖ In the present study, among 100 patients, 3% had *Phenila*, 19% had *Tanu*, 17% had *Rooksha*, 8% had *Vivarna* 8% had *Puti Gandha*, 17% had *Pichila*, 6% had *Avasadi*, 18% had a combination of *Tanu & Rooksha*, and 4% had *Vivarna & Puti Gandha Shukra Dusti*. A high incidence of *Tanu Shukra Dusti* was observed in this study.
- ❖ *Phenila*: It can be identified by observation only; semen looks like froth with a small bubble-like appearance. Effect on reducing sperm count and motility.
- ❖ *Tanu*: In this variety, semen has a thin, watery consistency with low volume. It can be understood by semen analysis as hypo-viscous semen and liquefaction time less than 15 minutes. Effect on reducing sperm count.
- ❖ *Rooksha*: It can be grossly identified by loss of *Snigdatva*, i.e., *Prakrita Guna* of *Shukra*. The semen with alkaline pH can be taken as *Rooksha Shukra*. Effects on reducing sperm count and motility.
- ❖ *Vivarna*: The yellowish or bluish discolored semen, identified by observation only. It mainly affecting on reducing motility of sperm and count also.

- ❖ *Putiganda*: Offensive foul smell due to infectious diseases. Effect on reducing sperm motility and count also.
- ❖ *Pichila*: Excessive sliminess of semen can be understood by liquefaction time of more than one hour and high viscosity semen with agglutination. Effects on reducing motility of sperm.
- ❖ *Anyadhatusamsrustam*: Semen mixed with other cells like macrophages, epithelial cells, and immature cells due to inflammation or injury to the genital tract. In the present study, no cases have been reported.
- ❖ *Avasadi*: Thick coagulated like appearance of semen, understood by sedimentation of semen in water. Effect on reducing sperm motility.
- ❖ In the current research study, 17% of patients had oligospermia, 25% had asthenospermia, 29% had oligo-asthenospermia, and 29% of patients had normal sperm count and motility.
- ❖ To conclude, oligospermia and oligoasthenospermia were major findings in the subjects of *Vataja Shukra Dusti*. In *Pittaja Shukra Dusti*, asthenospermia was a major finding, followed by oligoasthenospermia. In *Kaphaja Shukra Dusti*, asthenospermia was a major finding.

REFERENCES

1. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007. Sutra sthana, chapter 28, Shloka 18-19, pg 179.
2. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007. Chikitsa sthana, chapter 30, Shloka 135-138, pg 640.
3. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan; 2007. Chikitsa sthana, chapter 30, Shloka 139-140, pg 640.
4. Acharya Sushruta. Sushruta Samhita with Nibandhasangraha commentary of Sri Dalhanacharya. Edited by Acharya YT. Reprint ed. Varanasi: Published by Chaukhambha Surabharati Prakashan, 2008; Sutra sthana 1/8. Pg 3.
5. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda

- Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Chikitsa Sthana 1/9-12. Pg377.
6. Acharya Vagbhata, Vaidya Bhisagacharya Harisastri Paradakara ed. Astanga Hridayam samhitha with Sarvangasundari commentary of Arunadatta, reprint 11th edition, 2022; Sutra sthana, chapter 01, Shloka 13, pg 10.
 7. Acharya Vagbhata, Vaidya Bhisagacharya Harishastri Paradakara ed. Astanga Hridayam samhitha with Sarvanga sundari commentary of Arunadatta, reprint 11th edition 2022, Sutra sthana, chapter 11, Shloka 4, pg 183.
 8. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; chikitsa sthana 30/140, Pg 640.
 9. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; chikitsa sthana 30/141, Pg 640.
 10. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; chikitsa sthana 30/142, Pg 640.
 11. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; chikitsa sthana 30/143, Pg 640.
 12. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; chikitsa sthana 30/144, Pg 640.
 13. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Vimana sthana 8/98, Pg 277.
 14. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Vimana sthana 8/97, Pg 277.
 15. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Vimana sthana 8/96, Pg277.

16. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Vimana sthana 8/119, Pg280.
17. Acharya vagbhata. Astanga sangraha. Shashileksha vyakya commentary of Indu. Edited by Dr. Shivaprasad Sharma; varanasi; published by Chaukhambha sanskrit series office, 2009; Sutra Sthana.9/57. Pg 68.
18. Acharya vagbhata. Astanga sangraha. Shashileksha vyakya commentary of Indu. Edited by Dr. Shivaprasad Sharma; varanasi; published by Chaukhambha sanskrit series office, 2009; Sutra Sthana. 9/60 Pg 69.
19. Acharya vagbhata. Astanga Hrudaya. Sarvanga sundara commentary of arundatta, ayurveda rasayana commentary of hemadri. Edited by Bhishagacharya Harishastri Paradakara. varanasi; published by Chaukhambha Orientalia, 2005; Sutra Sthana 1/18. Pg12.
20. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Sutra sthana.26/43(3). Pg 144.
21. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Chikitsa Sthana. 2(4)/36, Pg 397.
22. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Sutra sthana.25/40. Pg 132.
23. Acharya vagbhata. Astanga Hrudaya. Sarvanga sundara commentary of arundatta, ayurveda rasayana commentary of hemadri. Edited by Bhishagacharya Harishastri Paradakara. varanasi; published by Chaukhambha Orientalia; 2005. Sutra sthana 4/19. Pg56.
24. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Sutra sthana.25/40. Pg 132.
25. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; chikitsa sthana 30/137, Pg 640.

26. Acharya Sushruta. Sushruta Samhita with Nibandhasangraha commentary of Sri Dalhanacharya. Edited by Acharya YT. Reprint ed. Varanasi: published by Chaukambha Surabharati Prakashan, 2008; Sutra sthana.11/5. Pg 45.
27. Agnivesha. Charaka Samhita. Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of Chakrapani Datta. Edited by Acharya YT. Reprint ed. Varanasi: Chaukhambha Surbharati Prakashan, 2007; Chikitsa Sthana. 2(1)/4, Pg 390.