



Review Article

REVIEW ON ROLE OF SHUKRA DUSHTI (VITIATION OF SEMEN) IN MALE INFERTILITY AND ITS MANAGEMENT

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ABSTRACT

Infertility is an indeterminate universal issue affecting humanity. It is noticed in approximately 60-80 million couple worldwide among which 40-50% of infertility is estimated to be due to male factors. Male infertility was remarked in *Ayurveda* as *Klaibya* and *Anapathya*. A separate branch as *Vajeekarana* (Aphrodisiac therapy) was established among eight branches of *Ayurveda*, emphasizing the awareness of physiology of *Shukradhatu* (Sperm) and its role in Reproduction along with the measures to procreate children. *Shukradushti/Retodushti* (vitiation of Semen) occurs due to congenital and acquired factors leading to defective formation or ejaculation of *Shukra* by vitiation of *Tridoshas* (three biological humors), resulting in *Klaibya* (Male Infertility). The clinical diagnosis of *Retodushti* (vitiation of semen) by clinical signs and symptoms and *Retopareeksha* (Semen Analysis) is essential for the management of *Klaibya*, by utilizing drugs possessing *Vrushya* (Aphrodisiac) *Shukrajanana* (Spermatogenic), *Shukrashodhana* (semen purifier) properties and diet-lifestyle modifications. Literature pertaining to *Shukradhatu*, *Shukradushti*, *Klaibya*, *Vajeekarana* from *Ayurvedic* classical literatures and reputed journals were referred to gather information. The mention of *Retopareeksha* in the era of absence of microscope for diagnosis of *Shukradushti* shows the awareness on the importance of male infertility in the Ancient period.

INTRODUCTION

The male factor responsible for *Garbothpadana* (Reproduction) is the *Shukra dhatu* (Sperm)^[1], which ensures continuation of species and thus is the sign of Masculinity.^[2] A person without a child is compared to a tree with just one branch devoid of fruits, signifying the role of men in genealogical chart advancement.^[3] Infertility is an indeterminate universal issue affecting humanity, clinically defined according to World Health Organization (WHO), International Classification of disease (ICD) - 11 as "A disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular

unprotected sexual intercourse.^[4] Infertility is noticed in approximately 60 – 80 million couple worldwide among which 40-50% of infertility is estimated to be due to male factors.^[5]

Male infertility was remarked in *Ayurveda* as *Klaibya*, *Anapathya*, *Shandatva*, *Napumsaka* and is classified into various types according to different Authors. (Table 1) ^[6-9]

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Table 1: Classification of *Klaibya* (Male-infertility) according to various literatures

<i>Charaka Samhita</i>	<i>Sushruta Samhita</i>	<i>Bhavaprakasha</i>	<i>Bhaishajya Rathnavali</i>
1. Beejopagathaja <i>Klaibya</i>	1. Manasa <i>klaibya</i>	1. Manasa <i>klaibya</i>	1. Manasa <i>klaibya</i>
2. Dhvajabhangaja <i>Klaibya</i>	2. Soumyadhatu kshaya (Aharaja) <i>klaibya</i>	2. pitta nimitta <i>klaibya</i>	2. Pittaja <i>klaibya</i>
3. Jaraja <i>Klaibya</i>	3. Shukrakshayaja <i>klaibya</i>	3. Shukrakshayaja <i>klaibya</i>	3. Shukra kshayaja <i>klaibya</i>
4. Shukra Kshayaja <i>Klaibya</i>	4. Marma Chedaja <i>klaibya</i>	4. Medrarogaja <i>klaibya</i>	4. Medrarogaja <i>klaibya</i>
	5. Sahaja <i>klaibya</i>	5. Marma Chedaja <i>klaibya</i>	5. Upagataja <i>klaibya</i>
	6. Bhramhacharyaja <i>klaibya</i> (kharashukra nimmita)	6. Shukrastambha nimittaka	6. Shukra sthambha nimittajaja <i>klaibya</i>
		7. Sahaja <i>klaibya</i>	7. Sahaja <i>klaibya</i>

Klaibya manifests due to vitiation of the *Beejabhaga* (part of sperm) or *Beeja* (Sperm) in the foetus, [10] and *Shukradushti/Retodushti*[11] (vitiation of Semen). Eight types of *Shukra dushti's* are mentioned by authors based on the vitiated *doshas* (humours of body) and characteristics which play a major role in diagnosis (Table 2) [12-15]

Table 2: Types of *Shukra dushti's* (vitiation of Semen) according to various *Acharyas*

<i>Acharya Charaka</i>	<i>Acharya Sushruta</i>	<i>Acharya Vruddha Vagbata</i>	<i>Acharya Laghu Vagbata</i>
<i>Phenila</i>	<i>Vataja</i>	<i>Vataja</i>	<i>Vataja</i>
<i>Tanu</i>	<i>Pittaja</i>	<i>Pittaja</i>	<i>Pittaja</i>
<i>Ruksha</i>	<i>Slesmaja</i>	<i>Slesmaja</i>	<i>Slesmaja</i>
<i>Vivarna</i>	<i>Kunapa</i>	<i>Kunapa Gandhi</i>	<i>Kunapa</i>
<i>Pooti</i>	<i>Granthi</i>	<i>Granthi</i>	<i>Granthi</i>
<i>Picchila</i>	<i>Pootipuya</i>	<i>Pootipuya</i>	<i>Pootipuya</i>
<i>Anyadhatu samsrusta</i>	<i>Ksheena</i>	<i>Ksheena</i>	<i>Ksheena</i>
<i>Avasadi</i>	<i>Mutrapureesha retasah</i>	<i>Mutrapureesha retasah + Abeja</i>	<i>Malahva yaha cha dvidha</i>

A separate branch as *Vajeekarana* (Aphrodisiac therapy) was established among eight branches of *Ayurveda* [16] emphasizing the importance and measures to procreate children. The preventive measures to avoid vitiation of semen or infertility is also mentioned in classical literatures.

AIMS & OBJECTIVES

- To understand the etio-pathogenesis and role of *Shukra dushti* (Vitiation of semen) in *Klaibya* (Male infertility).
- To diagnose *Klaibya* (Male infertility) due to *Shukra dushti* (Vitiation of semen) with special reference to Male infertility.
- To understand management of *Klaibya* (Male infertility) due to *Shukra dushti* (Vitiation of semen) with special reference to Male infertility.

MATERIALS

Literature pertaining to *Shukradhatu*, *Shukradushti*, *Klaibya*, *Vajeekarana* from *Ayurvedic* classical literatures and reputed journals are referred to gather information.

METHODOLOGY

Factors Responsible for Conception [17]:

Rutu (Fertile Period) - The period in between the natural consecutive menstrual cycle of a women is the fertile period.

Kshetra (Reproductive Organ) - Maintenance of the healthy condition of the reproductive organs mainly *Medra/Shepha* (penis), *Vrushana* (testicles) is important in males.

Ambu/Rasa (Nutrients) - The *rasa* present along with *Shukra* is to be available in the enough quantity and enhanced with good quality for nourishment of the *Shukra*.

Beeja/Shukra (Sperm) - *Shukra* possessing *Shuddha Shukra Lakshana* (features of pure semen) is essential for conception.

Formation of *Shukra Dhatu*

The nourishment of the succeeding *Dhatu* (Tissues) occurs by the preceding *Dhatu*, thus the *Shukra dhatu* gets nourished from the *Majja Dhatu* (Bone marrow) as per *Ksheera Dadhi Nyaya* (Theory of milk to curd conversion). [18] Through *Khale Kapota Nyaya* (Theory of pigeon and grains), the direct nourishment of the *Shukra dhatu* by intake of *Vrushya dravyas* (Aphrodisiacs) can be inferred. [19]

❖ **Shuddha Shukra lakshana (Features of pure Semen)**

Acharya Charaka states that *Shukradhatu* endowed with features as described (Table 3), will procreate child without any doubt. [20]

Table 3: Shuddha Shukra lakshanas (Features of pure semen) according to various Acharyas

Acharya Charaka	Acharya Laghu Vagbata	Acharya Sushruta
Bahalam + Bahu	Bahalam + Bahu	Dravam
Sweta	Shukla	Taila
Madhura	Madhura	Ksoudra nibham
Snigdham	Snigdham	Madhura
Guru / Ghanam	Guru	Snigdham
spatika sannibham		-
Avisram		Spatikabham
Avidahi		Madhu Gandhi
Picchila		

Shukravahasroto mula (channels carrying Semen) and its Dushti (vitiating) lakshana

Shukravaha srotomulas are Vrushana (testis), Shepha (penis) [21] and Vrushana, Sthana (Breast) [22] according to Acharya Charaka and Acharya Sushruta respectively. Shukravaha Sroto Dushti (vitiating of channels carrying semen) leads to Klaibya (infertility), Aharshana (lack of ejaculation), Shukra Dosha (vitiating of sperm), Apathya (Sterile) and Praja (progeny) born with Alpa ayu (short lived), Viroopa (disfigured), Kleeba (impotent). [23]

Shukradhara Kala (Membranes covering structures involved for semen formation)

Shukradhara Kala pervades the whole body of the living being and in men it is similar to the presence of Ghrita (ghee) in the whole milk or juice in the Sugarcane which gets ejaculated by sense of touch. [24]

Function of Apana Vata

Apana Vayu is responsible for ejaculation of Shukra (sperm/semen). [25]

Factors responsible for Ejaculation

By determination for the sexual act, the genital organs get erected and the semen gets ejaculated. The prime factor for ejaculation of semen is the sexual union between man and woman, where the female plays a major role. [26] The other eight factors responsible for ejaculation of semen are Harsha (excitement), Tarsha (Passionate desire), Saratva (Fluidity), Picchila (Sliminess), Gourava (Heaviness), Anubhava (Atomicity), Pravanabhava (tendency to flow out) and Maruta (force of vayu). [27]

Klaibya (Male infertility)

Klaibya is a condition of inability to perform sexual act or lack of desire in sexual act. [28]

General signs of Klaibya is that the man becomes incapable of performing the act and gets afflicted with dyspnoea, frustration and perspiration on the body. His phallus becomes loose and he will be unable to ejaculate the semen. [29]

Klaibya is one among the Shukrapradoshaja vikara (diseases due to vitiating dosha affecting shukra dhatu) and mainly occurs due to Shukra/Reto dushti i.e. "Retodoshodbhavam klaibyam". [7] Among the types of

Klaibya explained by various Acharyas, Shukra Kshayaja klaibya (Oligospermia) is mentioned by all the Acharyas. Shukra dushti is the major resultant leading to Klaibya in most of the other types of Klaibya like Aharaja (food), Manasaja (Mental factors), Bhramhacharyaja (due to suppression of urge), Shukrasthambhaja (obstruction of Shukra), Marmachedaja (injury of vitals), Medrarogaja (diseases of genital organs) and Pittaja klaibya (due to Pitta dosha). [6-9] Thus, understanding Shukra dushti in detail plays a vital role to evaluate and manage the Klaibya.

Etiologies Leading to Various Shukra Dushti - Klaibya [30]

The causes of Male infertility in about 70% remain unknown and this can be traced out by understanding the following parameters. [31]

Beejopaghatha (Congenital cause) - The defect in the Beeja or Beejabhaga leads to Kleeba (impotent) child. This is the cause of Beejopaghathaja Klaibya/Sahaja Klaibya.

Vaya (Age) - Elderly male aged above 60/70 years with Vata dosha predominance are under the category of Jara (old age), which is the cause of Jaraja Klaibya.

Aharaja Hetu (causes due to food articles intake) - Intake of Asathmya bhोजना (unwholesome food), food which are predominant of Ruksha (ununctuous), Tikta (Bitter), Kashaya (Astringent), Lavana (salt), Amla (Sour), Ushna (Hot) attributes. This is the cause of Aharaja klaibya.

Viharaja Hetu (causes due to lifestyle) - Ativyavaya (Excessive Sexual indulgence), Ativyayama (Excessive exercises), Untimely Sexual intercourse, Sexual intercourse through tracks other than the female genital organ, Abstinence from sexual rapport during appropriate time, Sexual intercourse with women who are not passionate, Shukra vegadharana (withholding the urge of ejaculation). Here, Shukra vegadharana leads to Shukra udavarta (misdirection of Shukra) [32] and thus is the cause of Brahmacharyaja Klaibya/Shukrasthambha nimmitaja klaibya.

Manasika Hetu (Mental factors)- Chinta (Worry) Shoka (grief) and Avisrambha (lack of confidence),

Bhaya (Fear), *Krodha* (Anger). This causes *Manasaja klaibya*.

Vyadhija Hetu (Emaciated due to diseases)– *Shukradhatugata Jwara* (type of fever), *Rajayakshma* (Tuberculosis) results into *Klaibya*. *Medraroga* (diseases of genital organs) causes *Medrarogaja klaibya*.^[33]

Agantuja Karana (External factors) – Injury by *Shastras* (Sharp instruments), *Kshara* (Alkalies) and *Agnikarma* (cauterization). Injury to *Marmas* (vital organs). This is the cause of *Marmopaghataja klaibya/Veeryavahini sira cheda janya klaibya/upaghataja klaibya*.

Rasavaha sroto dushti karana – *Rasavaha sroto dushti* (Vitiating of Channels carrying Rasa) leads to *Klaibya*,^[34] hence it is necessary to understand the causative factors.^[35]

Shukravahasroto dushti karana – Excessive indulgence in intercourse, withholding of urges, untimely sexual intercourse and injury of channels carrying semen by alkali and sharp instruments.^[36]

All the above mentioned causes results ultimately into *Shukra Kshaya* (Oligospermia/Hypospermia) leading to *Shukra Kshaya Janya Klaibya*.

Sexual Abnormalities – *Asekya* (scanty parental germ cell), *Sougandhika* (foul Genitalia), *Kumbika* (lasciviousness), *Irshyaka* (after seeing intercourse of others), *Shandaka* (impotent due to infatuation).^[37] *Dwiretaa* (Hermaphroditism), *Pavanendriyatva* (Aspermia), *Samskaravahi* (Anaphrodisia), *Narashanda* (Male sterility), *Vakri* (Hypospadias), *Irshyabhirati*

(Mixospermia), *Vatikashandaka* (Eversion).^[38] These can result into *Klaibya* due to lack of natural desire to indulge in act.

Pathogenesis of Shukra Dushti-Klaibya:

Due to the above mentioned causative factors, the *Vatadi Doshas* get aggravated individually or all together and reach the *Retovaha sira* (seminal channels) and vitiates the semen (*Shukra dushti*) upon localization.^[39] which finally can result into *Klaibya*.

Diagnosis of Shukradushti - Klaibya:

For the diagnosis of any disease, the knowledge on causative factors, clinical features and examinations /investigations are necessary.

Causative Factors: If the above explained causative factors are noted during case history taking, then the probability towards the diagnosis of *Shukra dushti* leading to *Klaibya* can be inferred.

Retopareeksha (Seminal Analysis): *Acharya Charaka* mentioned that semen should be examined before adopting treatment for its colour, by which the nature of the afflicted *Dosha* can be ascertained and appropriate therapeutic measure can be applied.^[40]

The clinical features of *Shukra dushti* explained below guides to ascertain the afflicted *dosha*.

Clinical Features:

1. Shukra Dushti Lakshana^[41-44]

Shukra dushti lakshanas occurs due to vitiating of *Dosha's* and will be noticed with various pathology. (Table 4-5)

Table 4: Shukra dushti lakshanas (Features of vitiating semen)

<i>Shukra dushti</i>	<i>Vataja Shukra Dushti</i>	<i>Pittaja Shukra Dushti</i>	<i>Shleshmaja Shukra Dushti</i>	<i>Kunapa Gandhi/Anyadhata samsrushta Shukra Dushti</i>	<i>Granthi / Avasadi Shukra Dushti</i>	<i>Putipooya ksheena Shukra Dushti</i>	<i>Malahva yam/Murapurish aja Shukra Dushti</i>	
Dosha Lakshana	<i>Vata</i> <i>Ruksha</i> (ununctuous) <i>Phena</i> (frothy), <i>Shyava</i> (whitish black) <i>Aruna</i> (red), <i>Krishna</i> (black) <i>Varna</i> , <i>Alpa</i> (small quantity), <i>Vicchinnam</i> (broken), <i>Rujam/Toda</i> (pain) <i>Chirat</i> (delayed ejaculation), <i>Krucchrena pravartana</i> (ejaculation with difficulty)	<i>Pitta</i> <i>Ushna</i> (Hot) <i>Visra gandha</i> (Foul smell) <i>Peeta/Neela varna</i> (yellowish/bluish colour), <i>Vivarna</i> (discolorations) <i>Osha Chosha</i> (Burning sensation) during ejaculation.	<i>Kapha</i> <i>Snigdha</i> (unctuous), <i>Pandu/Shukla varna</i> (Whitish), <i>Picchila</i> (slimy), <i>Prabhuta</i> (more quantity), <i>Vibaddha</i> (obstructive nature), <i>Kandu</i> (itching) Associated with <i>Majja</i> (marrow)	<i>Rakta</i> Dead body odour Ejaculated in profuse quantity.	<i>Kapha Vata</i> Resembles <i>Grathita</i> (clot) form Sinks when placed on water Ejaculated with difficulty.	<i>Rakta Pitta</i> Pus like appearance	<i>Vata pitta</i> <i>Dourbalya</i> <i>Mukhasho: ha Pandutva Sadana Shrama Klaibya Shukra avisarga Medravrus hana vedana Ashakti maitune</i>	<i>Tridoshas</i> possess the odour of <i>Mutra</i> and <i>puresha</i>

<i>Na Tat Garbhaya Kalpate</i> (Not leading to foetus formation)	during ejaculation
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Sadhya-Asadhyata (Prognosis) of Shukra Dushti and Klaibya [45-46]

Sadhya (Curable)= *Vataja Shukra dushti, Pittaja Shukra dushti* and *Kaphaja Shukra dushti*

Krucchra Sadhya (difficult to cure) = *Kunapa Gandhi, Granthibhuta, Puti pooya* and *Ksheena Shukra dushti's*.

Asadhyata (Incurable)= *Sannipataja Shukra dushti, Dhvajabhangaja klaibya* and *Kshayaja klaibya* [47], *Sahaja Klaibya* and *Marmachedaja Klaibya* [48]

Here, *Kshayaja klaibya* is considered as *Asadhyata* by few authors, though treatments are detailed to manage that condition mainly. In this case, it can be correlated to Azoospermia condition causing

infertility, which is incurable. On the other hand, on correlating the *Kshayaja klaibya* to Oligospermia or Hypospermia causing infertility, it can be considered to be under *Krucchra sadhya* condition.

Chikitsa (Treatment) of Shukradushti - Klaibya: Shukra Dushti Chikitsa

General line of treatment of *Shukra dushti* is to consume *Madhura* (Sweet) and *Tikta* (Bitter) food articles, medicines and accustom to exercise, intercourse and *Shodhana* (detoxification) [49] at proper time and quantity. Based on the specific *dosha* vitiation *Ashtavidha shukradushti chikitsa* (Eight types of vitiation of *Shukra*) is explained. (Table 6-7)

Table 6: Snehapana (oral administration of medicated fat) in various Shukra dushti (vitiation of semen)

Shukra dushti	Snehapana
Vataja	<i>Vata</i> alleviating drugs endowed with unctuous, hot, sour and salt property are to be utilized. <i>Vasuka Saindhava Phalamla Siddha Yavakshara</i> (medicated alkali) is to be processed for preparation of ghee.
Pittaja	Sweet, cold Astringent rich drugs, <i>Kandekshu Swadamshttra Guduchi Kwata Siddha Murva Madhuka Prativapa Sarpi</i> (medicated ghee processed with drugs)
Kaphaja	<i>Pashanabheda Ashmantaka Amla Kwatha Siddha Pippali Madhuka Churna Prativapa sarpi</i> (medicated ghee processed with drugs)
Kunapagandhi	ghee processed with <i>Dhatakpushpa</i> (Flower of <i>Woodfordia fruticosa</i>), <i>Khadhira</i> (<i>Acacia catechu</i>), <i>Dadima</i> (<i>Punica granatum</i>) and <i>Arjuna</i> (<i>Terminalia arjuna</i>) or with <i>Salasaraadi gana</i> or with <i>Asanadi gana</i>
Granthi	<i>Shati/Ashmabheda siddha</i> or <i>Palasha bhasma sadhita sarpi</i> .
Pootipooya	<i>Parushakadi gana</i> or <i>Vatadi gana</i> or <i>Nyagrodadhi gana Sadhita sarpi</i> (medicated ghee processed with drugs)
Malahvayam/Mutrapurish aja/vitprabhe	<i>Chitraka Usheera Hingu siddha ksheera</i> (medicated milk)

Table 7: Treatment of Ashtavidha Shukradushti (Eight types of vitiated semen)

Shukra Dushti	Shodana	Niruha basti	Anuvasana basti	Uttarabasti	Shamana
Vataja	Basti	<i>Bilwavidari siddha ksheera</i>	<i>Madhu badradaru siddha taila.</i>	<i>Ksheerakakolirasa siddha taila. Godhumadhya grita</i>	<i>Brihat Ashwagandha Ghrita, Mrutasanjeevani sura. Amrutaprasha ghrita chagaladhya ghrita</i>
Pittaja	Virechana - Trivruth churna with Gritha	<i>Payasya Sreeparni Siddha Ksheera</i>	<i>Madhukamudgap arni siddha tailam</i>	<i>Madhukamudgapa rni siddha tailam</i>	<i>Mahat chandanadi taila, Abhayamalaki rasayana.</i>

Kaphaja	Vamana - Madhanaph ala Kashaya, Virechana - Danti, Vidanga churna with Taila	Rajavruksha - Madanaphal a Kashaya	Madhuka pippali siddha taila	Madhuka pippali siddha taila	Magadhi rasayana, Amalaka rasayana, Loha rasayana, Triphala rasayana, Bhallataka Rasayana
Malahvayam/ Mutrapurishaja/ Vitprabhe	Vamana Virechana				Kamagnisandeep ana modaka
Anyadhatu Samsrushta	According to Pareeksha of dosha dushya, based on Yukti the appropriate treatment is to be adopted.				

Chikitsa of other parameters resulting in Shukra dushti are as follows:

Shukra Kshaya chikitsa (treatment of oligospermia/hypospermia) -

Shukravridhikaraka dravyas (drugs enhancing *Shukradhatu*) like egg of peacock and hen, meat of arid-marshy land animals, aquatic animals and *Ama garbha* (embryo) can be administered.

Shamana (Palliative treatment) - *Siddhasoota Shukra vrudhi rasa, Maheshwara rasa, Guda kushmanda, Rativallabha modaka, Bhringarajasava, Gorochanadi Gutika, Poornachandra Rasa, Vasantha kusumakara Rasa, Sidhamakaradwaja, Shiva Gutika, Chandraprabha gulika, Vidaryadi Kashaya, Saraswatharishta, Aswagandhadi ghrita, Kalyanaka ghrita, Panchagavya ghrita, Dhanwantaram Taila, Mahanarayana Taila, Mahamasha Taila.*

Shukra Vegadharana chikitsa - *Tamrachuda* (cock), *sura* (fermented drink), *Shali* (Rice), *Basti* (Enema), *Abhyanga* (massage), *Aavagaha* (tub bath). Milk processed with *bastishuddakara dravyas* and intercourse with *Priya stree* (interested women).^[50]

Shukra Gata Vata chikitsa and Shukraarvruta Vata chikitsa

The treatment of *Vayu* occluded by semen and *Vayu* located in semen, the food and drinks that promote *Bala* (strength) and *Shukra kara* (increase *shukra*) to be administered. In case of *Avarana/Vibaddha* (obstruction,) after *Virechana* (Purgation therapy) the above-mentioned food should be given.^[51]

Shukra Udavarta Chikitsa - *Basti* (Enema) to be administered with milk mixed with four times of water. The same can be boiled till the evaporation of the added water and given for oral intake. Then should be advised for sexual intercourse.^[52]

The drugs which are involved to perform various action of Shukra dhatu are as follows:^[53]

Shukra janaka/ Shukrala dravyas - *Kevala dehabalakara* (strengthens body) - Meat, ghee,

Jeevaniya gana dravyas, Ashwagandha (*Withania somnifera* Dunal.Linn.), *Musali* (*Asparagus adscendens* Roxb.), *Sugar, Shatavari* (*Asparagus racemosus* Willd.), Milk and *Masha* (*Phaseolus mungo* Linn.).

Shukra pravartaka - *Kevala Manobalakara* (strengthens mind) - *Uchata churna* (powder of *Mucuna pruriens* L. Hook), *Bhallataka phalamajja* (fruitpulp of *Semecarpus anacardium*) and *Amalaki* (*Embllica officinalis*); **Shukra Pravartini** - *Stree*.

Shukra Janaka Pravartaka (Drugs which enhance spermatogenesis)- *Dehamanobalakara* (strengthens body and mind) - Cow-ghee, *Godhuma* (*Triticum aestivum*), *Masha* (*Phaseolus mungo* Linn.) and *Kakanda phala* (Fruit of *Mucuna pruriens* L. Hook).

Shukra Rechaniya dravya (Drugs which promote semen ejaculation) = *Brihati phala* (Fruit of *Solanum indicum*)

Shukra Sthambana dravyas (Drugs which arrest semen ejaculation)- *Jatiphala* (*Myristica fragrans*)

Shukra Shoshana dravyas (Drugs which dry-up semen)- *Haritaki Vajeekarana yoga*

Shukrashodhana dravyas^[54] (Drugs which purify semen)- *Kushta* (*Saussurea lappa*), *Elavaluka* (*Prunus cerasus*), *Katphala* (*Myrica esculenta*), *Samudraphena* (Cuttlefish bone), *Kadamba niryasa* (Resinous extract of *Neolamarckia cadamba*), *Ikshu* (*Saccharum officinarum*), *Kandekshu* (*Saccharum spontaneum*), *Ikshuraka* (*Asteracantha auriculata*), *Vasuka* (*Spermacoce hispida*), *Ushira* (*Vetiveria zizanioides*).

Vajeekarana

Once the *Shukra dushti* is managed by adopting above mentioned measures, *Vajeekarana prayoga* (Aphrodisiac therapy) with *Vajeekarana Yogas* (Aphrodisiac formulations)^[55] plays a major role to improve the strength of *Shukra dhatu*, correct and prevent the recurrence of the *Shukra dushti* and to maintain its efficacy. Thus, Modality of treatment would be based on *Vajeekarana*, which makes a capable man, to enter and perform act with the women.^[56]

Basti (Enema) Chikitsa in Male Infertility [57]

For *Vajeekarana*, Basti containing ghee, honey and milk is beneficial. *Niruha basti* (Enema with medicated decoction) is considered to be *Shukra bala prada* (strengthens *shukra*) and *Anuvasana basti* (enema administered after food) is considered to be *Veerya balam* (strengthens sperm) and *Bala prada* (provides strength) in *Ksheena shukra* condition. Also it is stated by *Acharya charaka* that both the enemas are extremely useful for men who is lean and having *Ksheenendriya* (impaired sense organs).

Niruha basti (Enema with medicated decoction) – *Chaga mamsa rasa siddha niruha*, *Drakshadi niruha*, *Hapushadi niruha basti*. The 4 enemas with *Shukrala* (production of *Shukra*) action are: 1. *Kakoli* (*Roscoe purpurea*), *Ksheerakakoli* (*Lilium polyphyllum*), *Mudgaparni* (*Vigna trilobata*) and *Shatavari* (*Asparagus racemosus*). 2. *Vidari* (*Pueraria tuberosa*), *Madhuyashti* (*Glycyrrhiza glabra*), *Shrungataka* (*Trapa bispinosa*) and *Kaseruka* (*Scirpus grossus*). 3. *Godhuma* (*Triticum aestivum*), *Masha* (*Phaseolus mungo* Linn.), *Kapikacchu beeja* (Seed of *Mucuna pruriens* L. Hook and *Yava* (*Hordeum vulgare*) 4. Meat of marshy – aquatic animals

Anuvasana Basti (enema administered after food) – *Jeevaniya Yamaka*, *Vidangadi taila* and *Jeevantiyadi ghrita/taila*.

Yapana Basti (Medicated enema containing milk, meat etc.) – It is stated by *Acharya charaka* that *Yapana basti* is indicated in '*Narinam aprajatanam naranam ca apathyadhaa*' condition. [58]

- **Niruha Yapana Basti** – *Mustadi yapana*, *Erandamooladi yapana*, *Madhutailadhi yapana*, *Dwipanchamooladi Yapana*, *Sthiradi yapana*.
- **Anuvasana Yapana Basti** – *Shatavaryadi sneha*, *Baladhya sneha*, *Sahacharyadhya sneha*.

Uttara basti (Medicated enema administered through urethral passage in males) [59] – The repeated administration of *Uttara basti* is indicated in *Shukra-Arthava dosha* (vitiated sperm-ovum) after *Snehadi Shodhana* (Detoxification) procedure according to *Acharya Vagbata*. Maximum dose of *Sneha* (Fat) in *Uttara basti* is 1 *prakuncha* (48 grams) and *Kashaya* (decoction) of 1 *Prastha* (768 grams) in Male.

Pathya-Apathya (Wholesome and unwholesome diet-regimen)

Pathya-Apathya plays a major role to treat *Shukra dushti* and to prevent the recurrence of the condition. During and after the course of treatment person should be restricted to wholesome diet and regimen. [60] (Table 8)

Table8: Pathya-Apathya (Wholesome and unwholesome diet and lifestyle) of Shukra-dushti (vitiation of semen)

Pathya		Apathya	
Ahara	Vihara	Ahara	Vihara
Milk, Rice, Barley, Wheat, Ghee, Butter, Curd, <i>Kulattha</i> (<i>Dolichos biflorus</i>), <i>Nishpava</i> (<i>Lablab purpureus</i>), <i>Ikshu rasa</i> (sugarcane juice), Sugar, <i>Kilata</i> (caseous milk), <i>Kurchika</i> (cheese), <i>Narikelodaka</i> (Tender coconut), <i>Masha</i> , <i>Athmagupta</i> (Velvet bean), Meat soup, <i>Tittira mamsa</i> (partridge meat), <i>Kukkuta Mamsa</i> (chicken), <i>Chataka Mamsa</i> (domestic sparrow meat), <i>bileshaya mamsa</i> (meat of animals living in burrows), <i>sunishanna</i> (<i>Marsilea quadrifolia</i>), <i>kakamachi</i> (<i>Solanum nigrum</i>), <i>Vidari</i> (<i>Pueraria tuberosa</i>), <i>Kushmanda</i> (<i>Cucurbita pepo</i>), <i>Shatavari</i> (<i>Asparagus racemosus</i>), <i>Lashuna</i> (<i>Allium sativum</i>), <i>Draksha</i> (<i>Vitis vinifera</i>), <i>Mochadi dravyas</i> (<i>Bombax malabaricum</i> etc. drugs), <i>Priyala</i> (<i>Buchanania latifolia</i>), <i>Saindhava lavana</i> (Roak-salt), <i>Pippali</i> (<i>Piper longum</i>), <i>Shunti</i> (<i>Zingiber officinale</i>), <i>Jeevaniya panchamoola</i> .	Sleep, <i>Snana</i> (bath), <i>Shodhana</i> (detox)	<i>Kusumba beeja</i> (seed of <i>Carthamus tinctorius</i>), <i>Sarshapa taila</i> (Mustard oil), <i>Kshara</i> (Alkali)	Untimely sexual intercourse, suppression of natural urges and Intercourse must be avoided with menstruating lady, <i>sanyasi</i> (Hermit), same <i>gotra-stree</i> , suffering from diseases, wearing hatred clothes and during urge of micturition.

DISCUSSION

Among various synonyms mentioned for male infertility, *Klaibya/Vandhyatva* can be related to impotency – inability to bear a child, *Anapathya/Shanda/Napumsaka* to sterility- who is unable to give birth to a child. *Beejopaghataja klaibya* can be considered as a congenital cause leading to infertility, *Dwajabhangaja klaibya* with premature ejaculation or the injury to channels carrying semen, *Jaraja klaibya* with Male Viropause and *Shukra kshayaja klaibya* with oligospermia. The other types mentioned by various *Acharyas* based on the cause of *Klaibya* can be grouped under *Shukra Kshaya Klaibya*.

Shukra can be related to sperm, semen and Androgen in different contexts based on the action established. The properties of the pure semen which is composed of sperms with seminal and prostatic fluids can be correlated to the *Shuddha Shukra/Retas gunas* (Table 9) and semen and sperm abnormalities with *Shukra dushti*. (Table 10) and also macroscopic and microscopic features of sperm/semen abnormalities can be related to various *Shukra dushti*. (Table11)

Table 9: Relation of Shuddha shukra guna and sperm quality

Shuddha Shukra guna	Semen quality
<i>Snigdha</i>	Mucoid consistency of semen
<i>Ghana</i>	Specific gravity
<i>Picchila/ Ghrita-Makshika-Tailabham</i>	viscosity of semen for ejaculation
<i>Madhuram</i>	Fructose and carbohydrate components of the semen
<i>Avidahi</i>	Slight alkaline nature (optimum pH) for motility of sperms
<i>Sweta-Spatika Sannibham</i>	Milky White colour of the semen
<i>Bahalam</i>	volume of semen
<i>Bahu</i>	sperm count

Table 10: Relation between Sperm/Semen abnormality with Shukra Dushti

Semen Abnormality	Shukra Dushti
Aspermia	<i>Nashtashukra</i>
Hypospermia	<i>Alparetas</i>
Hemospermia	<i>Kunapagandhi</i>
Pyospermia	<i>Pootipuya</i>
Sperm Abnormality	Shukra Dushti
Oligospermia	<i>Ksheena Shukra</i>
Azoospermia	<i>Abeeja shukra dushti</i>
Asthenozoospermia	<i>Kapha vataja Shukra dushti (Granti)</i>
Teratozoospermia	<i>Vata pradhana sannipataja shukra dushti</i>
Necrozoospermia	<i>Ashukra (jeevarahita as stated by Vruddha Vagbhata)</i>

Table 11: Relation between Sperm/Semen macroscopic and microscopic abnormalities with Shukra Dushti

Vataja Shukra Dushti	
Macroscopic	Microscopic
-Liquifies within 5 minutes	-Azoospermia
-Increased pH (>6.3)	- Oligozoospermia
	-Teratozoospermia
Pittaja Shukra Dushti	
Macroscopic	Microscopic
-Yellowish colour	-Pyospermia
-Foul Smell	-Teratospermia
Kaphaja Shukra Dushti	
Macroscopic	Microscopic
-Hyper viscous	-Asthenospermia
-Sample which sinks to bottom	-Teratozoospermia
-Sample which does not mix in Water	
Kunapa Shukra Dushti	
Macroscopic	Microscopic

-Reddish colour/ Blood Mixed	- RBC
-Foul Smell	- Necrozoospermia

Pootipuya Shukra Dushti

Macroscopic	Microscopic
-Foul Smell	-Pyospermia
-Colour Change	

Granthibhoota Shukra Dushti

Macroscopic	Microscopic
-Agglutination	-Athenospermia (Aggregation of Sperm cells)

Malahva Shukra Dushti

Macroscopic	Microscopic
-Smell of Mutra Or Purisha	- Presence of E.coli

Anyadhatu Samsrushta Shukra Dushti

Macroscopic	Microscopic
-Blood mixed	-Immature sperm cells
	-Crystal
	-RBC's

Various Case studies dealt on the Shukra dushti are as mentioned below:

1. A 56-year old man with necrozoospermia was administered purgation with *Eranda taila* (castor oil) and oral medications for three and half months. Semen analysis Showed marked improvement in sperm count (9million from 2 million) and increase in the sperm motility. [61]
2. A male patient with Oligospermia (*Ksheena shukra*) and reduced sexual desire, was managed with *Virechana* and *Uttara basti*. It resulted into significant increase in sperm count (>50 million /ml) and motility (>50%) along with improvement in sexual desire. [62]
3. A 30-year old male with Oligo-asthenoteratozoospermia was managed with *Shodhana* for 15 days and *Shamana* therapy for 4 months. After 5 months, semen analysis revealed a significant increase in sperm count (52 million /ml), motility, morphology of cells and his wife conceived. [63]
4. A clinical study on *Shilajatu* in the management of *Puyaretas* (Pyospermia), with sample size 22 revealed that, *Shilajatu* administered as *Naimittika Rasayana* eliminated micro-organisms responsible for the disease and retained the health of patients. Also revealed statistically over all better improvement in patients of pyospermia. Two patients conceived, 2 improved and no change was observed in one patient. [64]

Research findings validating the claims of Vajeekarana Oushada is as follows

1. **Musali** [65] (*Asparagus adscendens* Roxb.) – It has spermatogenic effect by increasing Spermatoocytes

& Spermatoids, Increases weight of reproductive organ and increases Viscosity.

2. **Aswagandha** [66] (*Withania somnifera* Dunal.Linn.)- Anti oxidant, Increases testosterone, LH and FSH. It is claimed to Increase diameter of seminiferous tubules & the number of seminiferous tubular cell layers in the testes of treated rats. Reduces Semen Viscosity
3. **Kapikachu** [67] (*Mucuna pruriens* L. Hook) - Increases sperm count and motility. L-Dopa is claimed to stimulate Hypothalamus – GnRH, which in turn stimulates anterior pituitary gland to produce Gonadotropin, leading to spermatogenesis. Increases Sperm Count & Motility
4. **Shatavari** [68] (*Asparagus racemosus* Willd.)- Claimed to increase body and testes weights, testicular tubular diameter and the number of round/elongated spermatoids.
5. **Shilajathu** [69] (**Bitumen mineral**)- Significantly increases total testosterone, free testosterone and dehydroepiandrosterone (dehydroepiandrosterone sulphate) Maintains Gonadotropic hormone (LH and FSH) levels, also helps in pyospermia.
6. **Masha** [70] (*Phaseolus mungo* Linn.) - Increases Testosterone Levels, ahrodiastic, increase diameter of seminiferous tubules, increases spermatogenesis, increase weight of Seminal vesicle, Epididymis, prostate gland, and testies, Increases sperm count in epididymis.

Infertility affects around 1 in 7 couples of reproductive age, often causing psychological distress [71], by which people tend to opt for surgical

corrections or IVF/IUI. This can be prevented by opting management as per *Ayurveda*.

CONCLUSION

The regimen, lifestyle and mental factors affecting the *Shukra* (Sperm) formation or ejaculation and importance of examination of *Retas* (Semen) before adopting treatment, being highlighted even in the era of absence of microscope, emphasizes the awareness on the principle of the early diagnosis and intervention as the key for Success. After *Shodhana* (Detoxification) and *Vajeekarana yoga prayoga* (Aphrodisiac therapy), the health and productivity of *Shukra* is assessed to be enhanced and is expected to provide the scientific results to attain success in treatment and help men to attain progeny.

Hence-forth can be beneficial prior to In-vitro fertilization and Assisted reproductive therapy. Thus, integrative approach by establishing *Retodushti* (vitiating of semen) through advanced scientific method is beneficial in management of *Klaibya* (Male infertility).

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