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OLIGOZOOSPERMIA- THROUGH THE LENS OF AYURVEDA

[1]*Dr. Shivam Kumar, [2]Dr. Girish K. J. and [3]Dr. Gracy Sokiya

[1]PG Scholar, Department of Kayachikitsa Patanjali Bhartiya Ayurvigyan Evam Anusandhan Sansthan, Hardiwar.

[2]Professor, Department of Kayachikitsa, Patanjali Bhartiya Ayurvigyan Evam Anusandhan Sansthan, Hardiwar.

[3]Assistant Professor, Department of Kayachikitsa, Patanjali Bhartiya Ayurvigyan Evam Anusandhan Sansthan, Hardiwar.

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***Corresponding Author**
Dr. Shivam Kumar
PG Scholar, Department of Kayachikitsa Patanjali Bhartiya Ayurvigyan Evam Anusandhan Sansthan, Hardiwar.

ABSTRACT

Millions of couples throughout the world struggle with the very personal and frequently misunderstood issue of infertility. Male infertility continues to be a less talked-about but no less important concern than female reproductive health. Oligozoospermia, a disorder marked by a low sperm count, is one of the most common and significant reasons of male infertility among the different causes. From several decades, a sperm concentration of less than 20 million sperm/ml was classified as low or oligozoospermia; however, the WHO has recently revised the standards, establishing a new lower reference point of less than 15 million sperm/ml. In Ayurvedic parlance, oligozoospermia finds resonance with **Kshina Shukra**, a condition where the Shukra Dhatu—one of the seven vital tissues—is diminished or vitiated. Shukra is not merely a reproductive fluid; it is the culmination of all dhatus, the essence of vitality, creativity, and progeny. Classical texts describe **Shuddha Shukra** as clear, unctuous, sweet-smelling, and crystal-like—qualities that reflect both physical and energetic purity. When these attributes are compromised, fertility wanes. This article explores oligozoospermia through both modern and Ayurvedic lenses, offering holistic insights into its causes and care.

INTRODUCTION

Infertility is a deeply personal and often misunderstood challenge that affects millions of couples worldwide. In the quiet corridors of male infertility, oligozoospermia often goes unnoticed—until its implications ripple through the hopes of conception. Defined by modern medicine as a sperm concentration below 15 million per millilitres, this condition is increasingly common in today's stress-laden, sedentary lifestyles. But long before laboratory diagnostics, Ayurveda had its own lens to understand this subtle depletion of reproductive vitality.

Infertility is a significant global health concern, affecting approximately 8–12% of couples worldwide.[1] Among the various etiological factors, male infertility contributes to nearly 30–40% of cases.[2], with **oligozoospermia**—a condition characterized by reduced sperm count—being one of the most prevalent causes.[2] In Ayurvedic terminology, this condition is closely associated with **Kshina Shukra**, denoting a depletion or dysfunction of the Shukra Dhatu (reproductive tissue). Infertility is clinically defined as the inability to achieve conception after one year of regular, unprotected sexual intercourse.[1] While maleinfertility is often considered less complex than female infertility, its impact is substantial and frequently underestimated.[3] Excluding structural or anatomical abnormalities, diminished sperm count and compromised sperm quality are implicated in nearly 90% of male infertility cases.[2] **Oligozoospermia**, specifically, refers to a sperm concentration below the normal threshold, thereby reducing the likelihood of successful fertilization.

In classical Ayurvedic literature, the human body is understood to be composed of seven fundamental tissues, known as *Sapta Dhatus*: Rasa, Rakta, Mamsa, Meda, Asthi, Majja, and Shukra. Shukra Dhatu, the seventh and final tissue, is regarded as the essence (Sara) of all preceding Dhatus, representing the culmination of tissue transformation and nourishment.[4]

Although Ayurveda does not explicitly describe sperm in modern anatomical terms, it outlines four essential factors for conception: Ritu (timing), Kshetra (receptive field or uterus), Ambu (nutritive fluid), and Beej (seed). Among these, Beej is often interpreted as the male gamete, or sperm, in contemporary Ayurvedic discourse.[5]

The classical texts, including those of Acharya Charaka and Sushruta, elaborate on the characteristics of Shuddha Shukra (pure reproductive tissue), which is described as white, unctuous, sweet-smelling, and capable of fertilization. Deviations from these qualities are

categorized under Shukra Dushti, a pathological condition that impairs reproductive capacity. These vitiations may manifest as changes in color, consistency, quantity, or potency of the Shukra Dhatu, and are considered significant contributors to male infertility.[4,6]

SHUKRA DUSHTI V/S OLIGOZOOSPERMIA

TYPE OF DUSHTI	DESCRIPTION	DOSHA INVOLVEMENT	BIOMEDICAL EQUIVALENT	WHO CRITERIA (WHO, 2021)[10]
Kshina Shukra[7]	**Semen is reduced in quantity and vitality; depleted reproductive tissue**	**Vata-Pitta (primary), Kapha (secondary)**	**Oligozoospermia** (low sperm count)	**<15 million sperm/mL**
Alpa Retas[8]	Congenital deficiency in semen volume	Vata-Kapha	Congenital oligozoospermia or azoospermia	Often <5 million/mL or absent
Vishushka Retas[8]	Dry or absent semen, typically in old age	Vata predominance	Age-related testicular atrophy	Reduced motility and volume in elderly men
Dushta Retas[9]	Semen is vitiated due to doshic imbalance; may show abnormal color, odor, etc.	Tridoṣa (mixed pathology)	Teratozoospermia or asthenozoospermia	Abnormal morphology or motility
Shukra Kshaya[7]	Progressive depletion due to chronic disease or stress	Vata-Pitta	Chronic oligozoospermia	Persistent low count with systemic factors

In Ayurvedic terminology, Kshina Shukra refers to a pathological condition characterized by a reduction in the quantity and potency of Shukra Dhatu. It is described as "***Swamanaat Alpeebhuta Shukra***"—a state in which the reproductive tissue becomes scanty and functionally weakened. This depletion impairs the capacity for fertilization and is considered a significant factor in male infertility.[11,12]

Acharyas such as Sushruta and Vagbhata have used the term Kshina Retas synonymously with Kshina Shukra, emphasizing the diminished state of seminal fluid and its clinical implications.[13]

Oligozoospermia refers to a clinical condition characterized by a subnormal concentration of spermatozoa in the ejaculate. As defined in the Butterworth's Medical Dictionary, it denotes the presence of an insufficient number of sperm cells in semen, which may impair fertility potential.[14] The World Health Organization (2010) further specifies this condition as a sperm

concentration below 15 million spermatozoa per millilitres of ejaculate, based on standardized semen analysis criteria.[15]

This quantitative threshold is critical in the diagnosis of male infertility and serves as a benchmark in both clinical and research settings for evaluating reproductive health.

In Ayurvedic literature, Shukra Dhatu is regarded as the essence (Sara) of all bodily tissues and the foundation of reproductive vitality. Both Acharya Charaka and Acharya Sushruta have described eight distinct types of Shukra Dushti—pathological variations in the quality and quantity of seminal fluid—collectively known as **Ashta Shukra Dushti**.

NIDANA - According to Acharya Sushruta and Vagbhata, the vitiation of Vata and Pitta doshas plays a central role in the pathogenesis of Kshina Shukra—a condition marked by the depletion of reproductive tissue (Shukra Dhatu). Classical Ayurvedic texts outline both general causes of Dhatu Kshaya and specific factors leading to Shukra Kshaya. These include:

1. **Ativyavaya and Ativyayama** – Excessive indulgence in sexual activity and overexertion, which deplete bodily strength and reproductive essence.[16]
2. **Asatmya ahara Sevana** – Consumption of incompatible or non-nourishing foods that disturb doshic balance and tissue integrity.[17]
3. **Akala Maithuna** – Engaging in sexual intercourse at inappropriate times, disrupting the natural rhythm of reproductive function.[18]
4. **Ayoni Maithuna** – Sexual activity through unnatural routes, which is considered harmful to the Shukravaha Srotas and overall reproductive health.[17]

SAMPRAPTI

NIDAN SEVAN
↓
VATA PITTA PRAKOPA & SHUKRAVAHA SROTODUSHTI
↓ ↓
JATHARAGNI VAISHAMYA & STAHN SAMSHRAYA IN KHAVAIGUNYA
↓
RASAVAHA SROTODUSHTI → MALARUPA KAPHA VRUDDHI
↓ ↓
UTAROTTARA DHATUKSHAYA → MEDO DHATU DUSHTI→ SROTORODHA
↓
KSHINA SHUKRA
(OLIGOZOOSPERMIA)

The pathogenesis of Kshina Shukra begins when a healthy individual is exposed to causative factors (Nidana), leading to the vitiation of Vata and Pitta doshas. This foundational concept is emphasized in Charaka Samhita[19], where excessive sexual activity, incompatible diet, and untimely coitus are cited as key provocateurs. The aggravated doshas impair Agni (digestive fire), resulting in Jatharagni Vaishamya—a disruption of metabolic equilibrium.[20]

This impaired Agni leads to the formation of Dushita Rasa Dhatu (vitiated plasma tissue), accompanied by an increase in Kapha in its waste form (Mala Roopa), as described in Ashtanga Hridaya.[20] The vitiated Rasa obstructs the proper transformation of successive tissues (Uttarottara Dhatu Parinama), particularly affecting Medas Dhatu due to its shared qualities (Samanya Guna) with Kapha. This results in Medas Dushti and Srotorodha (channel obstruction), further impairing tissue metabolism and culminating in the depletion of Shukra Dhatu—clinically manifesting as Kshina Shukra.[21]

CHIKITSA

In Ayurvedic therapeutics, Chikitsa denotes the purposeful intervention executed by the fourfold pillars (Chatuṣpada)—the physician (Bhishak), medicine (Dravya), attendant (Upasthata), and patient (Rogi)—each endowed with ideal attributes, to restore Dhatu Samya (tissue equilibrium) in a state of Dhatu Vishamata (tissue dysfunction).[22]

The principal treatment maxim for Kshiṇa Shukra is encapsulated in the sutra: “KshineShukrakariKriya” —indicating that therapeutic efforts should aim to regenerate and nourish the depleted Shukra Dhatu.[22]

Acharya Charaka further elaborates in Vimana Sthana that a competent physician must adhere to three cardinal modalities of treatment:

- **Shodhana (**biopurification**)**
- **Shamana (**palliative management**)**
- **Nidana Parivarjana (**elimination of causative factors)[22]

a) Shodhana Chikitsa- Prior to administering Vṛushya (aphrodisiac) therapies, classical texts emphasize the necessity of Shodhana procedures to purify the bodily channels (Srotas) and eliminate Doṣha- Mala (waste products). This preparatory phase enhances Agni (digestive and metabolic fire), induces Laghava (lightness), and improves Karma Samarthya (functional capacity).[23]

The primary Shodhana modalities include

PROCEDURE	PURPOSE	TARGETED DOSHA	REFERENCE
VAMANA	Expels excess Kapha from upper GI tract	Kapha	Charaka Samhita, Sutra Sthana 2/14
VIRECHANA	Clears Pitta from lower GI tract	Pitta	Ashtanga Hridaya, Sutra Sthana 13/1
BASTI KARMA	Regulates Vata, nourishes Shukra via colon	Vata	Charaka Samhita, Siddhi Sthana 1/39

Among these, Basti holds particular significance in Kshina Shukra due to its direct action on Vata, which governs the movement and transformation of Shukra Dhatu. Anuvasana Basti (oil-based enema) and Niruha Vasti (decoction-based enema) are especially beneficial in rejuvenating reproductive tissues and enhancing systemic vitality.[22]

b) Shamana -In the management of Kshina Shukra (depleted reproductive tissue), Samshamana Chikitsa—the palliative and nourishing approach—plays a pivotal role following Shodhana (purificatory) procedures. Acharya Sushruta emphasizes Upachaya (anabolism) as the central therapeutic goal, which directly correlates with Shukra Vṛuddhi (enhancement of reproductive essence) and Unnatikara (promotion of vitality).[24]

According to the principle of Upashaya (suitability), pharmacological agents possessing **Madhura Rasa** (sweet taste), **Snigdha Guna** (unctuous quality), and **Guru Guna** (heaviness) are considered ideal. These attributes are associated with **Jivana** (life-promoting), **Brimhana** (nourishing), and **Harshana Karma** (pleasure-inducing) actions, which collectively support tissue regeneration and systemic rejuvenation.[24]

A wide spectrum of Shukrakara Aushadhis (reproductive tonics) may be selected based on the patient's constitution and pathological condition. These include:

- **VajikaranaYogas** – Formulations that enhance sexual vigor and reproductive potency
- **Shukra Dushti Chikitsa** – Therapies addressing vitiation of Shukra Dhatu
- **Raktapittahara Yogas** – Remedies that pacify Rakta and Pitta disorders, often implicated in Shukra depletion.
- **Yonivyapadahara Yogas** – Treatments for gynaecological disorders that may indirectly affect Shukra dhatu integrity.

Therapeutic Agents in Kshina Shukra

Ayurveda offers a rich pharmacopeia of **Shukrakara** (semen-enhancing) drugs, many of which fall under the category of **Vajikarana** (aphrodisiac and reproductive tonics). These agents are selected based on their Rasa, Guna, Veerya, and vipaka, with emphasis on **Madhura Rasa**, **Snigdha Guna**, and **Guru Guna**, which promote Brimhana (nourishment), Jeevana (vitality), and Harshana (pleasure).[25]

Key Drugs and Formulations

Drug/Formulation	Therapeutic Role
Kakoli (Roscoea purpurea Smith)	Vṛishya (aphrodisiac), Rasayana (rejuvenative), and shukra-vardhaka (semen-enhancing)[26]
Ashvagandha (Withania somnifera)	Adaptogenic, Rasayana, enhances sperm count and motility[27]
Kapikacchu (Mucuna pruriens)	Vruṣyha, improves libido and seminal parameters[28]
Shatavari (Asparagus racemosus)	Brimhana, balances Pitta, supports reproductive tissues[25]
Gokshura (Tribulus terrestris)	Diuretic, Vṛushya, strengthens urinary and reproductive systems[28]
Apatyakara ghrit	Sneha-based Rasayana, used post-shodhana for shukra Vṛddhi[29]
Mashashvagandhadi Churna	Compound formulation shown to improve seminal parameters[30]

DISCUSSION

In Ayurvedic physiology, the functional integrity of the body is governed by the dynamic interplay of the three fundamental bio-elements—vata, Pitta, and Kapha. These Tridoshas are present in every tissue and secretion, including shukra Dhatu (semen), and their balanced state is essential for health.[31]

Semen, as understood in modern anatomy, is a composite fluid comprising water, plasma, mucus, and trace nutrients. Ayurveda interprets these constituents through the lens of amsha-Amsha Vikalpa, a conceptual framework that analyzes the fractional presence of each Dosha within a substance.[32] For instance, the liquidity and unctuousness of semen reflect Kapha dominance, its metabolic and enzymatic activity corresponds to Pitta, and its motility and subtlety are governed by vata.

This tridoshic mapping not only aids in understanding the physiological nature of semen but also provides a diagnostic basis for identifying shukra dushti (vitiation), where imbalance in

any of the doshas may manifest as qualitative or quantitative abnormalities in reproductive function.

KSHINA SHUKRA & OLIGOZOOSPERMIA

In the classical Ayurvedic text Sushruta Samhita, within the section on aphrodisiac therapy (Vajikarana Tantra), the author outlines four primary types of seminal disorders: **low volume semen**, **dry semen**, **depleted semen**, and **vitiated semen.**[33] Among these, **depleted semen** is categorized under **vitiated semen**, which includes eight distinct types based on combinations of bodily regulatory forces (doshas).

The terms **depleted semen** and **reduced semen volume** are closely related but subtly distinct. According to classical commentary, **reduced semen volume** refers specifically to a measurable decrease in the quantity of semen, described as "less than the normal amount." This reflects a hypovolemic condition. On the other hand, **vitiated semen** arises due to imbalances in the body's regulatory forces—namely movement-related (Vata) and heat-related (Pitta) energies—which affect the quality of semen.

The condition known as **depleted semen** is marked by qualities such as dryness, lightness, and excessive mobility (linked to Vata), along with sharpness, heat, and lightness (linked to Pitta). These characteristics align with the biomedical condition **oligozoospermia**, which is defined by a reduced sperm count and impaired fertility.[34]

Other conditions described by Sushruta include low volume semen, which is considered a congenital trait—where the individual naturally produces less semen due to their inherent constitution. Dry semen, meanwhile, is typically observed in older individuals and is associated with age-related decline in sexual function and semen production.

Taken together, these descriptions allow for a meaningful correlation between the Ayurvedic concept of depleted semen and the modern diagnosis of oligospermia, offering a bridge between traditional diagnostics and contemporary reproductive medicine.

PATHOPHYSIOLOGICAL ROLE OF DOSHA IN OLIGOZOOSPERMIA

The progression of oligozoospermia, when interpreted through Ayurvedic pathology (Samprapti), reveals a nuanced interplay of bodily regulatory forces (Doshas) that varies according to an individual's constitutional makeup (Prakriti) and the nature of causative factors (Nidana Sevana). The condition known as Kshina Sukra—characterized by

diminished semen quality and quantity—is primarily driven by disturbances in the movement-regulating (Vata) and heat-regulating (Pitta) doshas. However, in chronic or advanced stages, the stabilizing and nutritive force (Kapha) may also become involved, contributing to further metabolic stagnation.[35]

Excessive intake of foods and behaviors that aggravate Vata and Pitta—such as irregular eating habits, spicy or dry diets, and psychological stress—can impair the digestive fire (Jatharagni), leading to forms of indigestion like acidic (Vidagdha) or obstructive (Vishtabdha) dyspepsia. This results in the formation of impure bodily fluids (Dushita Rasa), which fail to nourish subsequent tissues adequately. As the tissue metabolism weakens, a sequential depletion (Kshaya) of deeper tissues—including the reproductive essence (Shukra Dhatu)—occurs.[36]

This cascade of dysfunction disrupts systemic homeostasis and contributes to oxidative stress, a key factor in the pathogenesis of oligozoospermia. The Ayurvedic understanding thus aligns with biomedical insights into sperm count reduction, where metabolic imbalance and cellular damage play central roles.[37]

CONCLUSION

The Ayurvedic concept of kshina shukra, characterized by both quantitative and qualitative depletion of reproductive tissue (shukra dhatu), offers a compelling parallel to the biomedical diagnosis of **oligozoospermia**, defined by reduced sperm count and compromised fertility. Classical texts such as the sushruta samhita describe Kshina shukra as a disorder primarily governed by the derangement of Vata and Pitta doshas, with potential Kapha involvement in chronic stages (sushruta Saṃhita, sutrasthana 15/4; Dalhanacharya). This tridoshic imbalance disrupts tissue metabolism and leads to systemic depletion, aligning with modern understandings of oxidative stress and testicular dysfunction in male infertility.

The convergence of Ayurvedic and biomedical perspectives underscores the relevance of integrative diagnostics and therapeutics. Ayurvedic interventions—particularly vrishya (aphrodisiac) formulations and shukra vardhaka (semen-enhancing) therapies—can be strategically employed to restore reproductive vitality, improve seminal parameters, and address the underlying doshic pathology. Thus, kshina shukra not only serves as a diagnostic correlate to oligozoospermia but also provides a holistic framework for its management, reinforcing Ayurveda’s potential in contemporary reproductive medicine.

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