

Conceptual Study of Shukrala Karma

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Abstract

Propagation of species is the basic phenomenon in nature Parenthood remains one of the most desired goals of every couple. Vrusha (Vajikarana) chikitsa one of the branch of Astanga Ayurveda, deals with diseases and management of male reproductive system. Various pharmacological activities related to Vajikarana like Vrushya, Shukra prasadana, Shukravardhana and Shukrala etc. are referred to in Samhitas. One among them is Shukrala activity

As per the WHO report in India overall prevalence of primary infertility ranges between 3.9 16.8%. A recent report on status of infertility states 50% of infertility is related to reproductive anomalies are disorders in the male, in which 90% of male infertility problems are related to sperm count and positive association between the abnormal comes about 8.9 to 68.7% refers to sexual dysfunctions. Scheduling, the treatment modalities as per the requirement needs a Knowledge of pharmacological activities. Hence in this paper an attempt is made to study the karmas related to Vajikarama with special reference to Shukrala karma.

Keywords: Shukrajanan, vajikarana, vrushya, shukra, rasa panchak etc

Introduction

Shukra

Shukra is the final dhatu predominant in *somaguna* and having *shadrassa*. The prime function of *shukra* is *Garbhotpadana* and is also responsible for *Dhairya*, *Chavana*, *Preeti*, *Dehabala*, *Harsha* and *Beejartha*. Rasa dhatu which carry the nutrition of all the rest of the dhatus, is required to be healthy. As per the general rule of *dhatu poshana*, successive dhatu receives nutrition from prior dhatu. So, *Shukra dhatu* is nourished from *Majja dhatu*, *Shukra* is produced from the *sneha* of *Majja* by the action of *Shukra dhatvagni*. Such *shukra* pores out through the pores of *Asti dhatu* which is compared with new raw earthen pot. This can be compared with *Sarvadaihika shukra* because oozing out is caused by mental state of an individual ie *Sankalpa* (determination) *Harsha* (pleasure) etc, and further with influence of *Vyana vayu* it is excreted as an ejaculate.

Aims and Objectives

1. To review the literature in relation to Vajikarana. Shukrala and Spermatogenesis.
2. To understand Shukrala karma as an effective measure.

Material and Methods

Literature review is carried out from the texts namely Charaka samhita, Sushruta samhita Astanga hridaya, Sharangadhara samhita, Kayadeva nighantu, Bhavaprakasha nighantu Guytons Medical Physiology, Sembulingams Essentials of Medical Physiology and data compiled Relevant researches with reference to literary, experimental and clinical are referred.

1. Physical Properties of Shukra

Table 1: Physical properties of Shukra

Sr. No.	Properties	Indriya Grahya
1.	Colour	Shukla (white)
2.	Taste	Madhura/Shadrassa
3.	Smell	Avisra (not bad odour), Madhugandhi
4.	Consistency	Bahalam(thick), Snigda(unctuous), Bahu (large in quantity), Guru (heavy), Picchila(slimy)

Production and regulation of Shukra can understand by spermatogenesis and hormones that regulating spermatogenesis.

Spermatogenesis: "Spermatogenesis occurs in all seminiferous tubules during active sexual life, as a result of stimulation by anterior pituitary gonadotropic hormone. It is a right scheduled process by which male gametes called spermatozoa (sperms) are formed from primitive spermatogenic cells (spermatogonia). The process takes 74 days The Sertoli cells supply all necessary materials for spermatogenesis through the cytoplasmic attachment.

Stages of Spermatogenesis

- i) **Stage of proliferation:** Spermatogonia is divided by mitosis without change in chromosomal number and migrate along with Sertoli cell towards the lumen of seminiferous tubule.

- ii) Stage of growth:** During this stage primary spermatocyte grows into large cell.
- iii) Stage of maturation:** After reaching the full size, each primary spermatocyte quickly undergoes meiotic or maturation division, which occurs in two phase. In first stage each primary spermatocyte divide into two secondary spermatocytes and receives only the haploid of half the number of chromosomes 23 chromosomes include 22 autosomes and X or Y chromosome. In the second phase each secondary spermatocyte undergoes second meiotic division resulting in two smaller cells called spermatids Each spermatid has haploid number of chromosome.
- iv) Stage of transformation:** There a no further division Spermatid are transferred into matured spermatozoa (perms) by means of spermeogenesis and released by spermination.

Factors Influencing Spermatogenesis

Spermatogenesis is influenced by

- i) Sertoli cell.
 - ii) Hormones.
- i) Sertoli cell:** Supporting and nourishing the germ cells, providing hormonal substances necessary for spermatogenesis. Secreting androgen binding protein (ABP), which is essential for testosterone activity particularly on spermatogenesis, releasing sperm into the lumen of seminiferous tubules (Spermination). (Ref EMP Sembu).

2. Role of Hormones in Spermatogenesis

Table 2: Role of Hormones in Spermatogenesis.

Sr. No	Hormone	Function
1.	Follicular stimulating hormone (FSH)	Secreted by anterior pituitary gland It binds the Sertoli cells and spermatogonia and induces the proliferation of spermatogonia. It stimulate the formation of estrogen and androgen binding protein from the Sertoli cell.
2.	Luteinizing Hormone (LH)	Secreted by anterior pituitary gland. It is essential for secretion of testosterone from Leydig cells
3.	Testosterone	Secreted by Levdig cells is essential for growth and division of testicular germinal cells which is first stage of forming sperm.
4.	Estrogen	Formed from testosterone in Sertoli cell. It is necessary for spermatogenesis
5.	Growth hormone	Essential for general metabolic process in testis, also necessary for the proliferation of spermatogonia
6.	Inhibin	It is a peptide hormone secreted by Sertoli cell and stimulated by FSH which helps transforming growth factor
7.	Activin	It is peptide hormone secreted in gonads Along with inhibin increases the secretion of FSH and accelerates spermatogenesis

Semen analysis: The quality and quantity of Shukra is observed through semen analysis more aptly. The WHO has revived lower reference limits for semen analysts as follows.

- Volume: 15ml (95% CEL.4-17).
- Sperm concentration 15 million spermatozoan (95% CI 12-16).

- Total sperm number: 39 million spermatozoa per ejaculate (95% CI:33-46).
- Morphology 4%normal forms (95% CI: 3-4).
- Vitality: 58% live (95% CI: 55-63).
- Progressive motility: 32% (95% CI:31-34).
- Total (progressive non progressive motility) 40% (95% CI: 38-42).

Pharmacological Activities Related to Vajikarana

1. **Vajikarana:** One of the Astangas of Ayurveda deals with the management of conditions like *alpa retasa*, *dusta retasa*, *kshina retasa* and *vishuska retasa* with specific therapeutics namely *Apyayana*, *Prasadana*, *Upachava* and *janana* respectively. Among the above four condition except the first one (*prakruta*) other three are managed by adapting therapeutics having *Shukrala* activity."
2. **Vrushya:** The pharmacological activity widely used in Ayurveda texts in relation to potentiation of sexual vigor and improvement in seminal parameters like *vrisha* (bull), *Vrushya* has been used as a synonym for *Vajikarana* (*Charaka chikitsa sthana 1/1/5-6*) Chakrapani opines that substance which either facilitates ejaculation of semen and increase the production of *Shukra* is *Vrushya* (*Charaka chikitsa sthana (2/4/51)*). Dalhana opines that *Vrishya* has both *Shukra Janaka* (spermatogenesis) and *Pravartaka* (ejaculation activity,
3. **Rasayana:** The drug possessing *Rasayana* activity promotes *Vrushata* along with *Deerghayu*, *Smruthi Medha* etc."
4. **Virya prada:** *Virya* synonymously used for *Shukra*. *Viryaprada* means enhancing shukra also refers to vigor
5. **Shukra janaka:** The drugs which facilitate and increase the production of Shukra.
6. Chakrapani includes these under *Shukra vridhdhikara*, while Sharangadhara mentioned them as *Shukrala*. Example is *Shukra janana gana*."
7. **Shukra shodhana:** *Shukra shodhana* which alleviates doshas of Shukra as in *Shukra shodana gana*."
8. **Shukra vardhana:** Which increases the production of Shukra
9. **Shukra prada:** *Shukraprada* are those drugs which promote Shukra. While explaining pakva amra qualities the word *Shukraprada* is used
10. **9.Shukrada:** That which increases Shukra, eg kilata
11. **Shukra prasdana:** That which purifies Shukra and then enhances its qualities.
12. **Shukra rechana:** *Shukra rechana* similar to *Shukra pravartana* helps in ejaculation Eg. *Bruhati phala*.
13. **Shukra pravartaka:** *Shukrapravartaka* is that karma inclusive of promotion and emission of Shukra. Eg *Uchata* and *Stree*
14. **Shukrakari kriya:** In the management of khseena shukra *shukrakart kriya* is advocated which means *Shukravardhana*.
15. **Shukramakshayam:** In the context of *Vrushya kshira prayoga acharya Charaka* emphasizes that *dravya* having the attributes of *Shukrala*, *Jeevaneeya*, *Bhrimhana*, *Balya* *Sanyajanana*, if processed with milk and administered can produce abundant production of shukra with sustainability"
16. **Shukrakrut:** Which increases Shukra eg *Munjatha* (*Orchis latifolia*)
17. **Shukra stambhaka:** Drugs which help in capability of ejaculatory control during sexual act eg *Jatiphala*

18. **Shukra shoshana:** Reducing shukra through drying eg. Haritaki
 19. **Shukrahrut (Shukra nashana):** Distruction of Shukra Egs, Atasi, Kulatha,
 20. **Avrushya:** Antagonist to vrushya karma eg. Lakucha

Classification of Vrushya Dravyas

Chakrapani while commenting on the word Vrushya has identified three categories Shukravridhikara, Shukra sruthikara and Shukra sruti vriddhikara"

Similarly Dalhana in his commentary refers to three types of activities like Janakam, Pravartakam, Janaka Pravartakam. He further clarifies that Dehabalakaraka (janaka), Manobalakaruka (pravartaka) and Dehamanobalakaraka both (janaka and pravartaka).

Sharangadhara samhita defined Pravartini (stimulation) Shukra rechana (ejaculation) Shukra stambhaka (sustenance) and Shoshini (reducing). Under the classification of dravyas, Charaka has identified two therapeutic activities namely Shukra janana and Shukra shodhana. The commentator Gangadhara opines that both these activities are due to Prabhava.

According to Sushruta Muskakadi gana and Kantaka panchamoola are Shukradoshahara while other Kakolyadi gana and Amalakyadi gana are having vrushya activity

Shukrala karma: Sharangadhara defines Shukrala karma as "Yasmat Shukrasya vrudhi syat shukralam taduchyate". A pharmacological activity that increases Shukra is Shukrala

Commentator Adamalla is of the opinion that Shukrala karma refers to both the activites Shukra janaka and Shukra pravartaka. Kaiyadeva defines Shukrala as "shukralam shukra janakam"-that which is responsible for genesis. He also uses the term Vrushya for Shukravivardhana activity). In the context of Kshira guna Dalhana clarifies Vrushya as Shukra janaka. Vajikarana as Shukra pravartana". All the three acharyas of Bruhatrayi have the similar opinion that Shukrala means Shukra vrudhikara (quantitative enhancement of shukra),

Qualities of Vrushya dravya: The dravya possessing *Madhura rasa* (sweet), *Snigdha*(unctuous), *jeevana* (life promoter). *Bhrimhana*(nourishing). Guru (heavy for digestion) and *Harshanam manashchaiva*" (Promotion of pleasure) is called *Vrushya dravya*." In addition to above qualities mentioned by Charaka, acharya Vagbhata in Astanga hridaya adds Balavardhana. (Promoter of physical strength) Vrushya and Shukrala often used as synonymous terms.

Kshina shukra: Though eight types of shukra dosha can cause male infertility most commonly seen is ksheena shukra caused by vata and pittadosha associated with clinical features like Dourbalya, Mukhashosha, Panduta etc. Principle line of treatment as mentioned in Astanga hridaya for ksheena shukra is which emphasizes the need of Shukrala drugs.

3. Shukrala Dravyas with Varied Rasapanchaka

Table 3: Shukrala Dravyas with Varied Rasapanchaka

Sr. No.	Name of the Drug	Rasapanchaka	Karmas
1.	Shatavari(Asparagus racemosus)	Guru.snigdha, madhura rasa, shita virya	Medha Agnipustida. Vatapitta shamaka, Shukrakari Balya,
2.	Nagara.(Zingiber officinale) Sushruta sutra 46/226	Laghu Snigdha, Katu rasa, Madhura vipaka, Ushna virya	Hrudya, Vrushya Kaphavatahara
3.	Kshira(Susrutha sutra 45/49-50)	Dashagunam paya Madhura rasa, Shita virya, Madhura vipak	Jeevaniya, Rasayana, Vrushya, Vajikarana, Rasayana, Vata pita haram param (Susu 45/50)
4.	Panchsarpanaka (Draksha, Madhuka, Kashmarya, Khajura and Parushaka)	Guru Snigda, Madhura Kashaya rasa, Shita virya	Vrushya

Discussion

Shukra dhatu being the prime factor (sperm) in *Garbhotpadana*, also has an impact on whole body which is exhibited during copulation. Spermatogenesis is explained under four stages which is regulated by HPG axis. (Hypothalamic pituitary gonadal axis) Though *Shukrautpadana* finds its reference in the classics, the various stages of sperm maturation is not explained in detail. This knowledge is essential for understanding of Shukrala activity. Further the factors responsible for *Shukra janana* have been identified as-

1. Healthy Rasa dhatu,
2. *Samana and Vyana vayu*
3. Balanced *Jatharagni* as well as *Shukradharvagni*,
4. Kapha as an important component of Shukra dhatu
5. Shukravaha srotas, and
6. Manas

Shukrala and *vrushya* are used synonymously. Often the formulations referred to the word *Vrushya* while *Shukrala* for indicating as an attribute for single drug. In *Bhavaprakasha* alone about 45 and 21 drugs have been listed under *Vrushya*

and *Shukrala* respectively as reported in the article by Sumana Sing (Sumanasing *et al*).

About 19 pharmacological activities pertaining to Vajikarana listed in this article. In which 10 are indicative quantitative as well as qualitative enhancing of Shukra. Four activities namely shukra pravartaka, vrushya, vajikarana and rechana refer to rectifying the problems related to ejaculation Shukru shodhana and shukra prasdana activities are aimed at the complex activity like purification of vitiated shukra. Lastly three activities Avrushya, Shodhana and Shukra nashana are not of therapeutic importance.

Shukrala is a comprehensive term used for both activities namely Shukravardhaka and Janaka and Shukra pravartaka as clearly stated by Adamalla in his commentary on Sharangadhara samhita. Same is applied for Vrushya by commentators Chakrapani and Dalhana. Thus *Shukrala* is an activity on *Shukradathu* which results in both spermatogenesis and ejaculatory process.

Generally the drugs having Shukravardhana activity are said to have Madhura, Snigdha Shita guna. But the literary review reveals that the drugs with different Rasa panchaka also are listed under Shukrala dravyas.

Shatavari with rasapanchaka suitable for Shukrala dravya has been indicated for Ksheena shukra. This has been proved clinically effective as Shukrala when administered as Vrishva shatavari gritha as per the study carried out by Dr. Manash jyoti *et al.*, 2015)

The same Shatavari ghrita has been evaluated for better sperm function test by checking membrane intactness through HOS (Hypo osmotic swelling) which has significance.

These clinical trials confirm that Shatavari in addition to enhance the Shukra and improve the membrane intactness which may be because of Madhura, Shira, Snigdha guna which has accentuated by Ghrita. This effect requires influence of kapha and pacification of vata and pitta.

Second drug *Nagara* except vipaka is having Rasapanchaka almost opposite to drug Shatavari and Shukra dhatu. Still it has exhibited Shukrala activity in rats (Akash kaki at) Further in a clinical trial carried out at Fran, Nagara has shown positive influence on human sperm quality and rectifying DNA damage. This proves that Shukrala drugs acts at DNA level too. This may be proves that bhutagni and Shukra dhatvagni are also influenced by Nagara which commonly thought as jataragni dipaka. This activity requires Katu rasa, Laghu guna and Ushna virya,

Another yoga refers to Panchasara panaka, every ingredients in this yoga said to have Shukrala activity with similar rasapanchaka, Total effect of this yoga may be due to synergistic action.

Result

Unlimited and sustained enhancement of Shukra is an activity named as Shukramkshayam appears to an advanced and assured Shukrala activity which can be achieved by processing Shukrala dravyas with kshira. Because kshira is said to be *Sadya shukrakaraka*.

- Shukrala is the pharmacological activity of choice in the management of kshina shukra.
- Shukrala dravyas act at various stages of spermatogenesis
- Varied rasapanchaka yukta dravyas also acts as Shukrala because of their influence on various factors involved in spermatogenesis.

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