

PHYSIOLOGICAL STUDY OF *SHUKRA DHATU*- A REVIEW

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ABSTRACT

Individual *Purusha* is consists of three *Dosha* , seven *Dhatu* and three *Mala* which are the primary basic of living body. *Shukra Dhatu* is considered as best among all seven *Dhatu*s. *Shukra* is white, pure, excellent *Dhatu* which is located in entire body. Sperm along with spermatid fluid and male sex hormones are also one part of *Shukradhatu*. *Shukra* is *Saumya* which is derived from *Jala Mahabhuta* and counted as a *Kapha Vargiya Dravya*. It possesses *Shadrassa*. Quantity of the *Shukra Dhatu* is *Ardha* ($\frac{1}{2}$) *Anjali* in human body. Nearly one month is required for metamorphosis of *Ahara Rasa* into *Shukra Dhatu*. Main function of *Shukra Dhatu* is *Garbhpadana* (reproduction) Vitiating of *Shukradhatu* shows *Shukradhatudusti* (pathology) in the form of *Vridhhi* (hyper state) *Kshaya* (waning). This vitiating may leads to male infertility. So it is an important entity in context to reproduction.

Keywords: *Shukradhatu*, Semen, Reproduction

INTRODUCTION

Shukra is the substance which is responsible for all systemic body activities including metabolic functions and part of which comes out of the body at the time of sexual act and performs specific functions of reproduction. It is the product of four proto elements, *Vayu*, *Agni*, *Aapa* and *Prithvi* with all six *Rasa*s. *Shuddha Shukra Lakshanas* resembles the physical properties of the seminal fluid. *Garbhpadana* i.e., fertilization is a prime func-

tion of *Shukra*. *Garbha* is formed by fusion of *Shukra* and *Artava*¹. This main function of *Shukra* is attributed to spermatozoa. While enumerating *Shukra Pradoshaja Vikara*, it has been stated that, the vitiating of *Shukra* hampers one's fertilizing capacity. *Shukra* is *Saumya*² which is derived from *Jala Mahabhuta* but *Charakacharya* consider that *Shukra* contain all the *bhutas* except *Akash*. All the four *bhutas* (*Vayu*, *Agni*, *Prithvi* and *Am-*

bu)individually share one fourth of the attributes of each of the *Mahabhutas*. *Shukra* is *pittrija bhava*³ *Shukra Dhatu* is counted as a *Kapha Vargiya Dravya* according to *Harivan-shaPurana*⁴ and also *Acharya Vagbhata* stated *Shukra* as *Ashraya Sthana* of *Kapha Dosha*.⁵ *Shukra Dhatu* possesses *Shadrasa*⁶ and one of *Pranayatanas* of *Sharira*⁷. *Shukra* is one and ultimate dhatu of body. *Shukra* is produced as result of successive evaluative metamorphosis of *Ahara rasa*. Quantity of the *Shukra Dhatu* is *Ardha* (½) *Anjali* in human body as per *Acharya Charaka*⁸ but *Acharya Bhela* stated that quantity of *Shukra* is *Eka* (1) *Anjali*⁹.

AIMS AND OBJECTIVES:-

- To study methods of production of *Shukra Dhatu*.
- To study what is the characters and normal physiological function of *Shukra Dhatu*.

DISCUSSION

PRODUCTION OF SHUKRA FROM SOMA:

As described earlier *Bhautic* origin of *Shukra* is considered to be *Soma* or *Jalamahabhuta*¹⁰. As *Soma* or *Jala Mahabhuta* is the predominant basic element from which *Kapha* is derived. So it can be said that *Shukra* has originated from *Jala* or *Soma Mahabhuta*

PRODUCTION OF SHUKRA FROM AHARA RASA:

Beginning from *Rasa Dhatu* upto *Shukra* all the *Dhatu* are produced in a fashion of progressive evolutive metamorphosis. This means that *Rasa Dhatu* is basically produced from *Ahara Rasa* which is ingested by the action of *Jatharagni*. *Rasa Dhatu* gets converted into *Rakta Dhatu* and so on. Previous *Dhatu* is pre-

cursor to next and higher by the action of respective *dhatvagni* in it. So from *Majja Dhatu*, *Shukra Dhatu* is produced¹¹. The mode of conversion of *Ahara Rasa* into *Shukra* is explained by these hypotheses namely –

1. *Ksira-dadhi Nyaya*,
2. *Khale-kapota Nyaya*,
3. *Kedari-kulya Nyaya*
4. *Eka-Kaal Dhatuposhana Nyaya*

The ingested *Chaturvidha Ahara* converts in to *Ahararasa* after acting upon it by *Jatharagni* and *Bhutagni*. Then the action *Dhatwagni* starts. The former *Dhatu* gets converted and divided into two portions by the action of *Dhatwagni*. They are

- i) *Prasada Bhaga*
- ii) *Kitta Bhaga*

KSHIRA-DADHI NYAYA

According to this hypothesis, prior *Dhatu* is completely transformed into the next *Dhatu* like the milk is completely transformed into curd, then curd into butter and then butter into ghee. It is called *Krama-Parinam Paksha* also because the formation of next *Dhatu* up to *Shukra Dhatu* goes step by step and because the prior *Dhatu* transforms completely into the next *Dhatu* so it is called *Sarvaatma-Parinam Paksha* also. After acting the *Agni*, two parts are formed - *Prasad Bhag* and *Kitta Bhag*. Firstly the *Jatharagni* acts on *Ahara* and forms *Anna Rasa* as the *Prasad Bhag* and *Purisha* and *Mutra* as the *Kitta Bhag*. This *Anna Rasa* is processed by *Rasa Dhatvagni* and forms the *Prasada* and *Kitta Bhag*.¹²

Now this *Prasad Bhag* is divided into *Sthula* and *Sukshma Prasadansh*. *Sthula Prasadansh* nourishes the respective *Dhatu - Rasa*. *Sukshma Prasadansh* nourishes the *Upadhatu* and

forms the next *Dhatu* by its part resembling to that next *Dhatu* - *Rakta*. Now this next *Dhatu* nourishing part of prior *Dhatu* is processed by the respective *Dhatvagni* and forms the *Prasad* and *Kitta Bhaga*. In this series when the *Shukradhatu* resembling part of *Shukshma Prasadansh* of *Majja Dhatu* is processed by the *ShukraDhatvagni*, *Prasada* and *Kitta Bhaga* should be formed here. Because the *Shukra* is the last and purest *Dhatu* of our body so only *Prasad Bhaga* is formed which totally transforms into *Shukra Dhatu* and no *Kitta Bhaga* is formed here.

KEDARI-KULYA NYAYA

According to this hypothesis, *Anna Rasa* reaches at the specific *Dhatu* formation site of a *Dhatu* and transformed into that respective *Dhatu* by action of respective *Dhatvagni* on it. Pattern of reaching of *Anna Rasa* is like the pattern of a tributary of canal serving water to the field rows. It means which row is near to the tributary, water reaches there first. Like this, *Anna Rasa* nourishes *Rasa Dhatu* first and then *Rakta* and so on. *Shukra Dhatu* is nourished by the *Anna Rasa* lastly. *Shukra Dhatu* resembling part of the *Anna Rasa* is processed by *Shukragni* there and produces *Prasad Bhaga* without producing *Kitta Bhaga*. Now this *Prasada bhaga* nourishes the *Shukra Dhatu* completely without forming any *Ud-dhatu*.

KHALE-KAPOTA NYAYA

When the pigeons return back to their dwellings after feeding from field, every pigeon takes time according to the distance between the field and their dwelling. According to this hypothesis, there are different paths of the *Anna Rasa* to reach the

site of formation of a *Dhatu*. So as far as the site of formation of a *Dhatu* is, the path will also be lengthy and *Anna Rasa* will take more time to there and nourish that *Dhatu*. When the part of the *Anna Rasa* resembling *Shukra Dhatu* reaches at the site of *Shukra* formation through proper channels, *Shukra Dhatvagni* acts upon it and forms the *shukra dhatu* as described in *Kedari-Kulya Nyaya*.

EK-KAAL DHATU POSHANA NYAYA

Charaka and *Vagbhatta* says that the *Ahara Rasa* is spread and distributed into the entire body at the same time, continuously and always by the help of *Vyan Vayu*.¹³

Arundatta comments that all the seven *Dhatu*s are nourished at the same time due to the entry of this *Ahara Rasa* into channels of all seven *Dhatu*s at the same time¹⁴

PRODUCTION OF SHUKRA FROM MAJJA DHATU:

The highest stage to which food attains is the semen. *Shukra* is the seventh and final *Dhatu* as a *Sara* (essence) of all *Dhatu* and produced in a progressive evolutive metamorphosis. *Shukra Dhatu* derives from *Prasada Bhaga* of *Majja Dhatu* by the action of *Shukra Dhatvagni*.¹⁵ *Vayu* and *Akasha Mahabhuta* produce porosity in *Asthi Dhatu*. From this pores, *Shukra* oozes out like water from a new earthen pot and spreads all over the body.¹⁶

On the basis of *Dalhana Acharya's* commentary on *Sushruta* it is stated that *Mastiska* or *Mastulunga* is *Majja*,¹⁷ Prof. V. J. Thaker opines that brain and pituitary gland can be taken as functional representative of *Majja*. The production of *Shukra* and secondary hair growth at particular age can be understood in this way. (*Purushvichaya*)

TIME REQUIRED FOR PRODUCTION OF SHUKRA DHATU:

According to *Acharya Sushruta* nearly one month is required for metamorphosis of *Ahara Rasa* into *Shukra Dhatu*.¹⁸ But *Parashara* opines that eight days are enough for *Shukra Nirmana* from the *Ahara Rasa*. Finally, *Acharya Vagbhata* quoted all views of different authors, either it may take twenty four hours or six days or one month.¹⁹ *Acharya Chakrapani* has correlated all the above opinions and brought the concept according to the status of *Dhatvagni*.²⁰ According to *Acharya Chakrapani*, if *Dhatvagni* is at optimum level, then process of *Shukra* production occurs at speed of “*Archi*” (Fire) and produced within eight days. If *Dhatvagni* is at moderate level, *Shukra Nirmana* takes place at the speed of “*Shabda*” (Sound) and produces *Shukra Dhatu* within two to three weeks. And if *Dhatvagni* is at mild level, the process of *Shukra* production takes place at the speed “*Jala*” (water).

MECHANISM OF SHUKRA VISARGA (EJACULATION):

The *Shukra Dhatu* formed by the evolutionary metamorphosis pervades all over the body in the *Shukradhara Kala* and the *Kala* performs the following functions:

1. Abode for the pervading *Shukra Dhatu*: it holds and provides the abode for performing the *Sarvadaihika* (whole body) functions of *Shukra*.
2. Helps further transformation of *Shukra Dhatu* into *Roopa Dravya*.

The ejaculated part of *Shukra* is termed as *Roopa Dravya* which is the only visible part of the *Shukra Dhatu*. The formation of the *Roopa*

Dravya takes place in the *Vrishana*, the *Mula* of the *Shukravaha Srotasa*.

The process of its explained metamorphological in classics with following example - similar to water coming out of wet cloth when squeezed, *Shukra* comes out of man, out of its site during copulation between man and woman, because of *Cheshta*, *Sankalpa* and *Pidana*. Above these, *Sankalpa* is said to be *Parama* (best) *Vrishya* by *Acharya Charaka*.

Process of ejaculation is due to *Cheshta* (love play – physical stimulus) and *Sankalpa* (psychological stimulus) of *Stri* and *Purusha*, followed by *Harsha* (Passionate desire for enjoyment) & *Tarsha* (longing for women or psychic excitement) of both; and *Saratva* (fluidity), *Pichchhilata* (slimness), *Gaurava* (heaviness), and most important is *Anutva* (atomic nature) and *Pravanattva* (tendency to move from higher to lower concentration) of *Shukra Dhatu*. *Anutva* of *Shukra Dhatu* and at the same time *Anutva* of *Mana* are coincidental to bring out *Shukra* as ejaculatory part – *Roopa Dravya* which pervades all over the body.

The filling up of *Shukravaha Sira* under influence of psychological and physical stimulus i.e. *Harsha* result in tumescence, leading to erection of penis which facilitate sexual act. *Shukra* is secreted due to libidinous stimulation generated by woman’s sight, memory and touch.

Vyana Vayu controls *Rasavaha Sansthana* - circulatory system of the body and *Shukra* is also present in whole body while *Apana Vayu* influences sex orgasm acting locally. *Vyana Vayu* and *Apana Vayu* are mainly responsible for expulsion of *Shukra* to exterior through penis. Here both act as interdependent central and peripheral controls of process of ejacula-

tion. The eight psychosomatic factors related to *Mana* and *Shukra* play a major role in regulation of ejaculation. In total it is psychosomatic endocrinal mechanism.

CHARACTERS OF SHUKRA:

There are two important features of *Shukra* namely:

1. *SarvasariragataShukra*
2. Functions of Ejaculatory or *Rupadravya*

FEATURE OF SARVASARIRAGATA-SHUKRA:

The attributes of *Shukra Sara* individual can be considered as *SarvasariragataShukra*

- a. *Saumya* (Gentleman)
- b. *Saumyapreksinaha* (Gentle look)
- c. *Ksirapurnalochana* (eyes appearing filled with milk)
- d. *Praharshabahula* (cheerfulness)
- e. *Snigdha-vrittisamhata- Dasanaha* (teeth which are unctuous, round, strong, dense, even)
- f. *Prasanna - Snigdha-varnasara* (pleasant - unctuous voice and complexion)
- g. *Bhrajisnuta* (dazzling appearance)
- h. *Mahaspica* (large buttocks)
- i. *Stripriya* (loved by women)
- j. *Upabhoga balavana* (virile)
- k. *Sukha* (endowed with happiness)
- l. *Aishwarya* (prosperity)
- m. *Arogya* (health)
- n. *Vitta* (money)
- o. *Sammana* (honour)
- p. *Apatyabahula* (many offspring)²¹

FEATURE OF RETAS (EJACULATORY PART):

Shukra is the representative principle of (*Roopadravya*) of *Visvarupa (Atma)* in human body²². To achieve this *Visvarupa (sarirarupa)*, *Shukra* is principal cause for it. As *Atma*

is invisible to bare human eyes and also *nirguna*²³, similarly *SarvasariragataShukra* is also in covert form. But this *Shukra* trickles down during copulation between a man and woman, caused by *Chesta* (physical stimulus), *Sankalpa* (desire), and *Pidana* (stimulation of erogenous area of body). As a result of *Harsa* (stimulation), *Tarsa* (longing for women) *Sarattva* (fluidity), *Picchilata* (slimness), *Gaurava* (heaviness), *Anuttva* (automicity), *Prvanattva* (tendency to flow out) and *Drutattvat-Marutasya* ((pace of motion of *Vata*) covert *Shukra* is ejaculated out of body as *Roopadravya* or Semen²⁴.

This overt tangible *Shukra* or *Roopadravya* or Semen has physical characteristics that can be attributed to semen as well as sperm.

PHYSICAL CHARACTERS REPRESENTING SEMEN:

Acharyas have described the qualities of *Shukra*. The qualities are quoted as *Shuddha Shukra Lakshanas*.

- *Sphatikabha* (crystalline), *Ghrita- Ksaudra-Taila- nibha* (color that of ghee, honey, oil),
 - *Madhugandhi* (smelling like honey)²⁵
 - *Drava* (liquid), *Picchila*²⁶
 - *Bahu* (abundant), *Bahala* (thick)
 - *Avisra* (no bad smell), *Shukla* (white)
 - *Kaphavarga*²⁷
 - *Madhura* (sweet), *Snigdha* (unctuous)²⁸
 - *Sara* (mobile), *Sandra* (dense), *Ambasi kinchitmajjati* (which dips in water)-these represent *Rupadravya* or *Shukra* or Semen.
- 1) *Sphatikabha* indicates the colour of semen which is white and translucent.
 - 2) Quantity of semen indicated by *Bahu / Bahala* is the normal 1/2 *Anjali Pramana*.

- 3) *Madhugandha* is the special odour imparted to semen due to its different components.
- 4) *Madhura* taste of *Shukra* is due to fructose of the seminal plasma.
- 5) PH of the semen is referred by the term *Avidahi* i.e., not causing burning sensation during ejaculation indicating neither acidic pH, nor highly alkaline.
- 6) Normal consistency of semen is indicated by the characters like *Drava* (liquid), *Pichila* (viscous), *Snigdha* (unctuous) and *Sara* (fluid) due to various constituents of seminal plasma.
- 7) The tendency to flow out (*Pravana Bhava*) also indicates the semen that is expelled during intense pleasure of coitus.

CHARACTERS REPRESENTING SPERM:

Some characters of *Shukra* point to the sperm which forms a part of *Retas*.

- 1) *Phalavata*, a main character may be attributed to viability, motility, count and normal morphology of sperms. The sperm endowed with normalcy of all these is able to fertilize the ovum i.e., *Garbhakara*.
- 2) *Anutva* indicates the minuteness and sperm is a microscopic structure.

CHARACTERS REPRESENTING BOTH SPERM AND SEMEN:

The density of *Shukra* includes characters like *Guru*, *Ghana* which can be considered as pertaining to both semen and sperm.

FUNCTIONS OF SHUKRA:

Main function of *Shukra Dhatu* is reproduction; besides this a number of other functional characteristics are also attributed. These can be classified as under:

1. *Sarvadaihika* i.e. systemic function
2. *Maithunagata* i.e. related with sexual act
3. *Roopa Dravyagata* i.e. functions related to seminal fluid
4. Other functions

Specific function of *Shukra* is to maintain generations by producing healthy progeny. *Sushruta Acharya* says that main function of *Shukra* is *Beejartha*, means for production of offspring; It is the *Roopadravya* which comes out of man along with subtle sperms as a result of sexual intercourse which is *Falavat* meaning its potential for reproduction, when it combines with *Artava* in female uterus under favorable condition, can develop as a fetus.²⁹

SARVADAIHIKA – (General body functions):

As earlier described that *Shukradhara Kala* permeate the whole body and hence, the *Shukra* is spread throughout the body just as Ghee in milk or jaggery in sugarcane juice. *Sushruta* has beautifully noted certain important functions of the *Shukra Dhatu* eg. *Dhairya*, *Chyavana*, *Preeti* etc. They are like –

Dhairya:

Dhairya is noted as the quality of *Satvika Prakriti*.³⁰ It has been explained as the remedy for mental morbidity. *Dhairya* is the control over mind, stability and adherence by which one follows the good and avoids the bad. By this property one can stand difficulties on account of strong will power without much anxiety. *Acharya Dalhana* described it as the capacity to fight against any condition³¹ and is related to the physical and mental alertness. (Apte, 1984) *Dhairya* of patient is examined by virtue of *Avishada*³² *Bhaya* is the opposite quality of *Dhairya*.

Dehabala:

Acharya Dalhana said that *Dehabalam* includes both *DehaUpachaya* i.e. physical fitness as well as *Utsaha* i.e. enthusiasm.³³ *Utsaha* the stimulation to perform any activity or enthusiasm to perform any activity is dependent on *Shukra Dhatu* and can be explained as a physical as well as mental attribute. While *Upachaya* – physical fitness is characterized by the maintenance of optimal level of all *Dhatu* which imparts *Bala* to the individual.³⁴

Ojoposhaka:

Shukra is also responsible for production of *Ojas*.³⁵

These action of *Sarvadaihika Karya of Shukra* can be compared to systemic function of Androgen i.e. testosterone.

MAITHUNAGATA KARMA – (Functions related to sexual act):

The functions of *Shukra* pertaining to the sexual act are not par independent to the *Sarvadaihika Shukra* and these are –

Chyvana:

According to Acharya Dalhana *Chyavana* is the ejaculation of semen³⁶. It should have optimum timing. The timing of ejaculation depends on *Dhairya*.

Preeti:

Preeti explained by different authors as described below:

- 1) Love/inclination towards the opposite sex.³⁷
- 2) Peace/pleasure of mind is also *Preeti*.³⁸
- 3) *Preeti* is the pleasure which is reflected by joyous appearance of the face or eyes etc.³⁹
- 4) *Preeti* is examined by *Toshena*.⁴⁰ Dalhana Acharya also explained that *Preeti* is indi-

rectly induced by *Ojas* under the control of *Shukra Dhatu*.

Harsha:

The term *Harsha* has been used to denote different meanings like *Ananda*, horipilations (*Romancha*), *Preeti*, *Kama*, *Tushti* etc. In the present context the term *Harsha* means psychological process developed from the enjoyment of different sensorium leading to the arousal and alteration of consciousness which is gradually developing.

Harsha is stimulating pleasure to initiate the sexual act by psychological means.⁴¹ *Harsha* in relation to sexual act may be termed as anxiety/desire (*Utkantha Jananam*) with regard to sex.⁴² *Harsha* can be most appropriately termed as excitement produced due to determination (*Samkalpa*) of mind leading to erection and ejaculation.

Decrease in *Harsha* causes decrease in *MaithunaShakti* therefore *Harsha* does not develop and since there is no *Harsha* even in the presence of *Maithuna Shakti Chyavana* and *Preeti* cannot be achieved. It is this *Harsha* developing as a result of the sight, thought, or coitus with female that is responsible for the semen to be ejaculated.

Manoharshana is quality of *Rajasika Prakruti*⁴³ *Harsha* is tested by *Amoda*⁴⁴ which is the indulgence in dancing, singing, playing musical instruments and being in festive mood.

RETAS RELATED FUNCTIONS OR FUNCTIONS RELATED TO SEMEN:

The main function of *Shukra* besides other important functions is *Garbhajanana*. *Sushrutaacharya* says that main function of *Shukra* is *Bejartham*, means for production of offspring⁴⁵. It is the *Rupra Dravya* which comes out of man along with subtle sperms as

a result of sexual intercourse⁴⁶ which is *Phalvat* meaning - its potential for reproduction, when it combines with *Rajas* (ovum) in female uterus under favourable condition, can develop as a foetus⁴⁷.

GENERAL BODY FUNCTIONS:-

Shukra dhatu imports physical power to the individual. *Dalhana* explains that the *dehabala* is provided by *Shukra* in two ways.

1] *Utsahalakshanam*

2] *Upachayalakshanam*

Utsaha- The stimulation to perform any activity or enthusiasm to perform any activity is dependent on *Shukra Dhatu*⁴⁸ and can be explained as a physical as well as mental attribute.

Upachaya- Physical fitness is characterised by the maintenance of optimal level and all *Dhatu*s which imports *Bala* to individual. *Shukra* is also responsible for production of *Ojas*.⁴⁹

OTHER FUNCTIONS:-⁵⁰

1) *.Ksheerapoornalochanatvam*

2) *Snigdhavrittisara samhata*

3) *Prasanna and Snigdha Svara*

4) *Prasanna and Snigdha varna*

5) *Bhrajishnuta*

6) *Mahashpika*

7) *Sukha*

8) *Aishvarya*

9) *Vitta*.

UPA-DHATU OF SHUKRA:

Acharya Sharngdhara has mentioned *Ojas* as the *Upa Dhatu* of the *Shukra*.⁵¹ Also *Acharya Bhavmishra* supports the opinion regard *Upa Dhatu*.⁵²

MALA OF THE SHUKRA DHATU:

Acharya Vagbhata stated *Ojas* while some *Acharya* indicate *Smashru* as the *Mala* of *Shu-*

kra.⁵³ *Vaktra Snigdhata* (sebum of the face) and *Yuavana Pidaka* (Acne) are *Mala* of *Shukra* according to *Acharya Sharngdhara*.⁵⁴ But *Acharya Chakrapani* mentioned that *Shukra* has no *Mala*.⁵⁵

CONCLUSION

Shukradhatu is produced from *aahar ras* through *Majjadhatu* it is *somya* or *Jala mahabhuta pradhana*. *Shukra* is situated entire body. There are so many functions of *Shukradhatu* but main function of *Shukra Dhatu* is reproduction.

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