Relationship between Shukra Sara Purusha with Quality of Semen: A Pilot Study

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Dhatu sarata is an excellent state for any particular dhatu (tissue). Shukra dhatu (Reproductive tissue) is one of the seven dhatu reflects reproductive health. Garbhottpadan (reproduction) is main function of Shukra dhatu (Reproductive tissue). Characteristics future of shukra (Semen) is given by ayurvedacharya and this quality of shukra (Semen) said to be best for fertility. Shukta dhatu (Semen) can be correlated with semen. Its quality and quantity affects reproduction and any deformity is lead to infertility in male. Pilot study was conducted to find out relationship between Shukta dhatu sarata and quality of semen. An observational pilot study conducted on apparently healthy volunteers. 30 male volunteers of age group 25-35 yearr were selected and their Shukra dhatu sarata (Supreme quality of Reproductive tissue) were assessed with standard proforma. Then categorized into Uttam (supreme), Madhayama (Moderate) & Hina (Average) sara on the basis of presence number of characteristics. Semen analysis i.e. semen volume, total sperm count, sperm motility is done in laboratory of same individuals. Higher Sperm count, good Sperm motility and high semen volume are found in Uttam Shukradhatusara (Supreme quality of Reproductive tissue) individuals as compare to hina shukradhatusara (Average quality of Reproductive tissue) individuals. It is not possible to come to any conclusion as this was pilot study. Further study should be conducted on large sample size.
Keywords: Shukra dhatu; shukra dhatusara; semen volume; sperm motility; sperm count.

1. INTRODUCTION

Dhatusara (Supremacy of body tissue) reflects qualitative and functional status of dhatu (tissue) [1]. In Ayurveda, characteristics of each dhatusara is mentioned and it shows excellent state of same dhatu. Garbhotpadan (reproduction) is main function of Shukra dhatu (Reproductive tissue) [2]. Quality of Shukra dhatu is mentioned i.e. Stree-priya (liking by opposite gender) Stree-Upbhoga, (enjoy sexual activities) Balavant (having good strength) Apatyabhaj (good progeny) [3]. Quality of semen is very much essential for conception and healthy progeny. Any type of deformity in semen (volume, count, motility of sperm) leads to infertility in male. Further is lead to stressful situation in married life. Main purpose of present study to make awareness regarding reproductive health. Pilot study was conducted to find out relationship between Shukra dhatusarata and quality of semen.

1.1 Aim and Objectives

- To find relationship between Shukra dhatusara purusha and quality of semen
- To Assess Shukra dhatusarata in apparently healthy individuals,
- To assess semen analysis (semen volume sperm count and sperm motility) of different shukra dhatusarata individuals.

2. MATERIALS AND METHODS

This observational pilot study was conducted on 30 healthy male volunteers of different Shukra dhatusara to analysis quality of semen.

2.1 Sampling Technique

Purposive sampling.

2.2 Sample Size

30.

2.3 Selection Criteria

2.3.1 Inclusion criteria

- Apparently healthy male volunteers.
- Age between 25 to 30 years

2.3.2 Exclusion criteria

- Individuals having any diagnosed systemic disorders and on medication for the same.
- Individual not living together with their sexual partner

2.4 Parameter of Assessment

Subjective: Shukra dhatusarata [4].

- Shukra dhatusarata was assessed with standard proforma. Questionnaires are based on characteristics are given in Ayurved samhita.

Objective: Semen analysis.

Semen Volume, Sperm count, Sperm motility.

- It was done in laboratory.

Collection of semen: volunteer must had to abstinence of at least 3 days, sample was collected by masturbation method in dry, sterile, plastic container. Semen volume, Sperm count and Sperm motility were analyzed.

2.5 Study Design

Inform written consent was taken

Shukra dhatusarata was assessed

Volunteers were grouped into three, based on presence of Characteristic of Shukra dhatusarata

Group-1 (Uttam Shukra dhatusara) – 66.67-100
Group-2 (Madhyama Shukra dhatuSata) – 33.34-66.66
Group-3 (Hina Shukra dhatusara) – 0-33.33 %

Semen analysis were done of same individuals

Analysis of data

3. OBSERVATIONS

A total of 30 male volunteers were participated in the study.

Table 1. Age of volunteers

| Age group(Year) | No. Of individuals | percentage |
|-----------------|--------------------|------------|
| 25-30           | 18                 | 60         |
| 31-35           | 12                 | 40         |
| Total           | 30                 | 100        |
Table 2. Shukra dhatusara parikshana

| Types of Sarata | Score | Subjects | Percentage |
|----------------|-------|----------|------------|
| Uttama         | 13-19 | 11       | 36.66      |
| Madhayama      | 7-12  | 10       | 33.34      |
| Hina           | 0-6   | 9        | 30         |

Table 3. Semen volume in different Shukra dhatusara individuals

| Types of Sarata | Average Semen volume per ejaculation | Total |
|-----------------|--------------------------------------|-------|
| Uttama          | 4.79 ml                              | 11    |
| Madhayama       | 3.52 ml                              | 10    |
| Hina            | 2.3 ml                               | 9     |

Table 4. Sperm count in different Shukra dhatusara individuals

| Types of Sarata | Average Sperm count (million /ml) | Total |
|-----------------|-----------------------------------|-------|
| Uttama          | 98.18                             | 11    |
| Madhayama       | 62.2                              | 10    |
| Hina            | 26.55                             | 9     |

Table 5. Sperm motility in different Shukradhatusara individuals

| Types of Sarata | Average Sperm motility (%) | Total |
|-----------------|----------------------------|-------|
| Uttama          | 74.72                      | 11    |
| Madhayama       | 55.9                       | 10    |
| Hina            | 38.89                      | 9     |

4. STATISTICAL ANALYSIS AND RESULTS

Parsons’s correlation test was applied to know relationship between relationship between shukra dhatusara purusha with quality of semen.

Table 6. Correlation of characteristics of Shukra dhatusara and semen volume

| Characteristics of Shukradhatusara (X) and Semen volume (Y) | X     | Y     | N-No. of Subject | r     | P-Value     |
|------------------------------------------------------------|-------|-------|------------------|-------|-------------|
|                                                            | 10.2  | 3.62  | 30               | 0.9218| 0.00001     |

\[ X = \text{Mean of Characteristics of Shukra dhatusara}, \ Y = \text{Mean of Semen volume, } N=\text{No. of Subject}, \ r = \text{Correlation coefficient} \]

The result is significant at \( p < .01 \) this is a strong positive correlation, which means that high Characteristics of Shukra dhatusara go with high Semen volume and vice versa.

Table 7. Correlation of characteristics of Shukra dhatusara and sperm count

| Characteristics of Shukradhatusara and Sperm count | X     | Y     | N     | r     | P-Value     |
|---------------------------------------------------|-------|-------|-------|-------|-------------|
|                                                   | 10.2  | 64.7  | 30    | 0.9116| < .00001   |

\[ X = \text{Mean of Characteristics of Shukra dhatusara}, \ Y = \text{Mean of Sperm count, } N=\text{No. of Subject}, \ r = \text{Correlation coefficient} \]

The result is significant at \( p < .01 \) this is a strong positive correlation, which means that high Characteristics of Shukradhatusara go with high Sperm volume and vice versa.
Table 8. Correlation of characteristics of Shukra dhatusara and sperm motility

| Characteristics of Shukra dhatusara and Sperm motility | X  | Y  | N  | r   | P-Value |
|--------------------------------------------------------|----|----|----|-----|---------|
| Shukra dhatusara                                       | 10.2 | 57.7 | 30 | 0.9412 | < .0001 |

X = Mean of Characteristics of Shukra dhatusara, Y = Mean of Sperm motility, N = No. of Subject, r = Correlation coefficient

The result is significant at p < .01. This is a strong positive correlation, which means that high Characteristics of Shukra dhatusara go with high Sperm motility and vice versa.

5. DISCUSSION

5.1 Discussion on Shukra Dhatu and Shukra Dhatusarata

- The substance which comes out during coitus is ‘Retas’ (Semen).
- Principle organs of Shukra Vaha Srotasa (male reproductive system) i.e., Shukra dhatu (Reproductive tissue) are testes and penis [5]. Shukra Dhatu is present in whole body. Seventh ‘Kala’ is ‘ShukradharaKala’ [6] (membrane separate tissue) which is present all over the body but it is particularly located at the distance of two ‘Angula’ (fingers)’ laterally to the right side of ‘Bastidwara’ (bladder) & ‘Mutramarga’ (urethra and penis) [7].
- By the active participation of ‘Panchamahabhuta’ (five basics elements) Saptadhatu utpatti (formation of seven tissue) takes place. Shukra dhatu (Reproductive tissue) is formed at the last stage, ‘Agni’ (Biotransformation power) digests the ‘Majjadhatu’ (bone marrow present in hollow spaces of ‘Asthidhatu’ (bone tissue) and formation of ‘Soma’ (watery) Gunatmaka (Quality) Shukradhatu occurs. It takes one month for generation of Shukra (Semen) [8]. By the special action milk is turned immediately into Shukra.
- Shukra (Semen) is Soumya (mild), Avidahi (Cool), Drava (fluid), Shweta (white), Sphatikasannibha (Quality like quartz), smelling like honey, Picchila (slimy), Bahala (abundant) and its color is like oil or honey. Such semen is supposed to be fertile. Extreme ‘Snigdha Guna (Uncutuous)’s chief property of Shukra (Semen) is capable of offering strength to the body [9].
- Principle function of Shukradhatu is Garbhotpadana (reproduction). It gives courage to person. Further it has functions – Chyavan (get ejaculated smoothly during intercourse), Priti (creates softness in mind), Dehabala (strength to the body) and Harsha (arouse man for reproduction) [10].
- Shukra dhatusara individual are mild looking pleasant to look, Their eyes are as if filled by milk, always happy, their teeth are set equally, are of Snigdha Guna (unctuous) look round, close to each other, their voice and color is pleasant, Snigdha. Their pelvic region is broad and they are dear to females. They enjoy females. They are strong, achieve happiness, wealth, health, money, felicitation and children [11].
- These individual have Snigdha (unctuousness), Samahata (compact) white teeth and nails. They have strong sex desires and are fertile [12].

5.2 Discussion on Semen Analysis

5.2.1 Semen

Semen is a white or gray fluid that contains spermatozoa. It is the collection of fluid from testes, seminal vesicles, prostate gland & bulbourethral glands. Semen is discharged during sexual act and the process of discharge of semen is called ejaculation. Testis contributes sperms. The prostate secretion gives milky appearance to semen. And the secretion gives milky appearance to semen. And the secretions from seminal vesicle and Bulbourethral glands provide mucoid consistency to semen. At the time of ejaculation, human semen is liquid in nature. Immediately it coagulates and after some time it undergoes a secondary liquefaction. The fibrinogen secreted by seminal vesicle is converted into a weak coagulum by the clotting enzymes, Secreted by the prostate gland. The coagulum is liquefying after about 30 minutes as it lysed by fibrinolysin. Fibrinolysin is the activated form of profibrinolysin produce from prostate gland. When semen ejaculates; the sperm are non-motive due to the viscosity of the coagulum. When coagulum dissolves, the sperms become motile [13].
5.2.2 Properties of semen [14]

- Specific gravity - 1.028.
- Volume - 2-6 ml. per ejaculation.
- Reaction – it is alkaline with pH of 7.5. The alkalinity is due to the secretion from prostrate gland.

5.2.3 Composition of semen [15]

Semen contains 10% sperms and 90% of fluid part which is called seminal plasma. The seminal plasma contains the product from seminal vesicle and prostate gland. It also has small number of secretions from the mucus glands, particularly the Bulbourethral gland.

Semen examination is an integral part of the evaluation of the infertility. As a result of relative simplicity semen examination is often requested before the complicated and expensive examinations of females. Repeat examination should be done if once it is found to be abnormal.

5.3 Discussion on Statistical Analysis and Result

Parsons’s correlation test was applied to know relationship between relationships between shukra dhatusara purusha with quality of semen i.e. Semen volume, sperm count & sperm motility.

Test is significant there is relationship between characteristics of Shukra dhatusara and Semen volume, sperm count & sperm motility.

As discussed earlier, Shukra Dhatusarata is reflection of supreme quality and function of shukra dhatu. Shukravaha strotas can be correlated to that of Male Reproductive system. Quality of Shukra dhatu described in Samhita is similar to that of semen. Best quality of both is responsible for new offspring i.e. reproduction. Hence Shukra dhatu can be correlated with semen on the basis of their same quality and function.

Semen volume is seen more in Uttam shukra dhatusara individuals that reflects Bahal (abundant) quality of shukra dhatu. Less volume is seen in Hina shukradhatu sara individuals due to average quality shukra dhatu. Sperm count and sperm motility were found in higher range in uttam shukra dhatusara individuals as compare to madhyam and hina shukra dhatusara individuals. That reflects average quality of semen and shukra dhatu in hina shukra dhatusara individuals.

### Table 9. Semen analysis testing

The WHO has provided normal limits of reference for semen analysis. The values mentioned in the chart below represent the accepted 5th percentile for the parameters measured [16].

| Parameter                  | Normal quality | Marginal quality | Abnormal quality |
|----------------------------|----------------|------------------|------------------|
| Volume                     | > 1.5 mL       |                  |                  |
| Total sperm number         | 39 million sperm per ejaculate or more |                  |                  |
| Morphology                 | >4 percent normal forms using the tygerberg method |                  |                  |
| Total (progressive motility and non progressive motility) | >40%       |                  |                  |
| Viscosity                  | <2 cm after liquefaction |                  |                  |
| pH                         | >7.2           |                  |                  |
| Vitality                   | >58% live sperm |                  |                  |
| No sperm agglutination     |                |                  |                  |

### Table 10. Classification of semen quality [17]

| Semen parameter                   | Normal quality | Marginal quality | Abnormal quality |
|-----------------------------------|----------------|------------------|------------------|
| Semen volume(ml.)                 | 2-5            | 1-2              | <1               |
| Sperm motility (%)                | >50            | 40-50            | <40              |
| Sperm concentration. ( mill/ml)   | 20-250         | 10-20            | <10              |
6. CONCLUSION

- Average Semen volume in uttam, madhyam & hina Shukrasara individual is 4.79 ml, 3.52 ml & 2.3 ml respectively. Semen volume is higher in Uttam shukrasara.
- Average Sperm count in uttam, madhyam & hina Shukrasara individual is 98.18 million /ml, 62.2 million /ml & 26.55 million /ml respectively.
- Sperm motility in uttam, madhyam & hina Shukrasara individual is 74.72%, 55.9%, & 38.89% respectively.
- There is supreme quality of semen and shukra dhatu is found in uttam shukra dhatusara individuals.
- On the basis of same quality and functions Shukra dhatu is correlated with semen.
- Uttam shukra dhatusara and best quality of semen are the sign of best Reproductive health.
- There is significant relationship between characteristics of Shukradhatusara & Semen volume, sperm count & sperm motility.

CONSENT

As per international standard or university standard, patients’ written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Charak Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda-Dipika commentary by Chakrapanidatta, edited by Vaidya Yadavaji Trikamji Aacharya, Vimansthana Chapter 8; Verse No-94. Published by Chaukhamba Surbharati Prakashan Varanasi; Reprint; 2011.
2. Ashtanga Hridaya of Vagbhata with the commentaries Sarvangasudara of Arundatta & Ayurvedarasayana of Hemadri; Annotated by Dr. Anna Kunte & Krishna Navre, edited by Pt. Hari Sadashiva Shastri Paradkar Sutrasthan chapter 11, verse no.4, Chaukhamba Sanskrit Sansthan Varanasi Reprinted; 2009.
3. Charak Samhita of Agnivesha elaborated by Charaka & Drudhabala with ‘Ayurveda-Dipika’ commentary by Chakrapanidatta, edited by Vaidya Yadavaji Trikamji Aacharya, Vimansthana Chapter 8; Verse No 103, Published by Chaukhamba Surbharati Prakashan Varanasi.Reprint; 2011.
4. Chandar Parkash Gunawat et.al, weighted mean: A Possible Method to Express Over All Dhatusarata, Ayurveda Inteqr Med. 2015;6(4):286-289.
5. Charak Samhita of Agnivesha elaborated by Charaka & Drudhabala with ‘Ayurveda-Dipika’ commentary by Chakrapanidatta, edited by Vaidya Yadavaji Trikamji Aacharya, Vimansthana Chapter 5;Verse No 17, Published by Chaukhamba Surbharati Prakashan Varanasi. Reprint; 2011.
6. Charak Samhita of Agnivesha elaborated by Charaka & Drudhabala with ‘Ayurveda-Dipika’ commentary by Chakrapanidatta, edited by Vaidya Yadavaji Trikamji Aacharya, chikitsasthana Chapter 15;Verse No 33, Published by Chaukhamba Surbharati Prakashan Varanasi. Reprint; 2011.
7. Sushruta Samhita of Sushruta with ‘Nibandhasangraha’ commentary by Dalhanacharya and ‘Nyayacandrika’ Commentary by Gayadasa; edited by Yadavaji Trikamaji Aacharya, Sharirasthana Chapter4; Verse no. 20, published by Chaukhamba Sanskrit Sansthan Varanasi, Reprint; 2009.
8. Ashtanga Hridaya of Vagbhata with the commentaries Sarvangasudara of Arundatta & Ayurvedarasayana of Hemadri; Annotated by Dr. AnnaKunte & Krishna Navre, edited by Pt.HariSadashiva Shastri Paradkar Sharirasthan chapter 3,
verse no.66, Chaukhamba Sanskrit Sansthan Varanasi Reprinted; 2009.
9. Charak Samhita of Agnivesha elaborated by Charaka & Drudhabala with ‘Ayurveda-Dipika’ commentary by Chakrapanidatta, edited by Vaidya Yadavaji Trikamji Aacharya, chikitsasthana Chapter 2/4Verse No 50, Published by Chaukhamba Suvbhutarati Prakashan Varanasi. Reprint; 2011.
10. Sushruta Samhita of Sushruta with ‘Nibandhasangraha’ commentary by Dalhanacharya and Nyayacandrika Commentary by Gayadasa: Edited by Yadavaji Trikamaji Aacharya, Sutrassthan Chapter15; Verse no. 15; published by Chaukhamba Sanskrit Sansthan Varanasi, Reprint; 2009.
11. Charak Samhita of Agnivesha elaborated by Charaka & Drudhabala with ‘Ayurveda-Dipika’ commentary by Chakrapanidatta, edited by Vaidya Yadavaji Trikamji Aacharya, Vimansthana Chapter 8; Verse No 111, Published by Chaukhamba Surbhutarati Prakashan Varanasi. Reprint; 2011.
12. Sushruta Samhita of Sushruta with ‘Nibandhasangraha’ commentary by Dalhanacharya, edited by Yadavaji Trikamaji Aacharya, Sutrassthan Chapter35; Verse no. 16. Page no.152, published by Chaukhamba Sanskrit Sansthan Varanasi, Reprint; 2009.
13. Medical Physiology for Under Graduate Students by Indu Khurana & Arushi Khurana, Section 9, chapter 9.2, page 598, 2nd addition Elsevier publication; Delhi; 2018.
14. Essential of Medical Physiology, K Sembulingam & Prema Sembulingam, Section 7, chapter 74, page 503, 8th addition, JAYPEE Brothers Medical Publication, New Delhi; 2019.
15. Principles of Anatomy and Physiology’ by Dr. Gerard, J. Tortora and Dr. Sandra Reynolds, Chapter-, page-158, Harper Collins College Publishers, 12th edition.
16. Practice Committee of the American Society for Reproductive Medicine. Diagnostic evaluation of the infertile male: A committee opinion. Fertil Steril. 2015; 103(3):e18-25. [PubMed] Available:https://www.fertstert.org/article/S0015-0282(16)45624-4/pdf