WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 14, 1729-1740. Review Article ISSN 2277– 7105

AN ANALYTICAL REVIEW ON PHYSIOLOGICAL RESPONSE OF SHUKRA SRUTIKAR AND SHUKRA VRIDDHIKAR DRUGS ON HUMAN REPRODUCTIVE SYSTEM

***Dr. Sheetal U. Roman**

(Prof.-Kriya Sharir) (Ph.D Scholar) Dr. D.Y. Patil Vidyapeeth, Pune.

Dr. D. Y. Patil College of Ayurvedand Research Centre, Pimpri, Pune 18 Maharashtra, India.

Article Received on
20 October 2021,

Revised on 10 Nov. 2021,
Accepted on 30 Nov. 2021

DOI: 10.20959/wjpr202114- 22499

***Corresponding Author**
Dr. Sheetal U. Roman
(Prof.-Kriya Sharir) (Ph.D Scholar) Dr. D.Y. Patil Vidyapeeth, Pune.

ABSTRACT

Physiology of Ayurveda is based on dosha, sapta-dhatus, mala, agni, triguna, ama, ojas and Srotas. Srotases are the channels (pores), which are present throughout the visible body as well as at the "invisible" or subtle level of the cells, molecules, atoms, and subatomic strata. It is through these channels that nutrients and other substances are transported in and among these, the channels carrying nutrients to the reproductive system is called Shukra vaha Srotas. Healthy functioning of shukravaha Srotas plays pivotal role in maintaining the harmony and happiness in marital life. A light has been thrown on concept of physiological action of shukra vriddhikar and srutikar dravyas on reproductive system in both sexes. Anatomical and Physiological aspect of Reproductive system is significant in understanding the action of drugs on enhancement in structural qualities and functional upgradation to achieve fertility.

KEYWORDS: shukra, shukravaha Srotas, shukramala, shukradushti chikitsa.

INTRODUCTION

Kama means not only materialistic desires of human beings but also includes sexual life through which healthy progeny can be obtained. According to Manu, the origin of human sect, one cannot attain the final attitude in moksha without getting an offspring .Healthy Shukravaha srotas can help achieve this concept.

But if the functions of shukravaha Srotas are deranged due to causes like malnutrition diet, behaviors, psychological factors, injuries and iatrogenic factor it will affect the beeja,

beejabhaga, beejayavayava factors producing the diseases like vandhya, klaibya, dhvajabhanga, shanda, etc. Therefore it is the need to study the fundamental and applied aspect of shukravaha Srotas in order to understand the ayurvedic physiology and the disease process of shukravaha Srotas in depth.[1] Concept and application of shukravaha Srotas without getting an offspring which was cleared by charakas' words i.e. the man alone without offspring's looks like a single tree having only one branch, shade less, fruitless and with foul smell.[2] Shukra dhatu is the seventh dhatu among seven dhatus. From Majja dhatu shukra dhatu formation occurs in shukravaha srotas which can be understood via dhatu poshan nyayas. This shukra dhatu performs main function of garbha utpadan.(zygote formation) and further fetal development. Charaka in Chikitsasthana has put forth the chain of formation of one dhatu from other. Majja dhatu by virtue of its own dhatwagni forms shukra poshak ansha which go into shukravaha srotas and after being acted upon by shukra dhatwagni give rise to shukra dhatu.

At this stage if good quality shukra is not formed it is going to affect reproductive health of individual.[3]

METHODOLOGY

Materials: Literary material, i.e., Ayurvedic classical texts and commentaries, Textbooks, published articles, internet were reviewed to collect the data during work.

Methods: Literary data collected were compared and analysed on classical background to find similarities, dissimilarities and highlights on related topic are reviewed for study.

Shukradhara kalais important structure, which occupies in whole body. In metabolism of Shukradhatu nutrients essential for Shukradhatu are digested bYShukuradhatwagni andforms Shukradhatu.[4] Shukra is of two types : 1. Sthanik shukra -Localised in testes. 2. Sarvadaihik shukra -Present all over the body.

Concept of Shudhha Shukra – Shukra is formed from Prasada Bhaga of Majja and is Sarva Shareera Vyapi. It is composed of 4 Mahabhutas, Vayu, Agni, Aap and Pruthvi; it Is Madhura Rasa Yukta Shweta Varna.[5] Sarva Shareera Vyapi Shukra is responsible for:- 1.Various other features like; Soumyata, Ksheerapurna Lochana, Bhrajishnuta, Prasanna Snigdha Varna, Snigdha-Vruttasamhata Dashana, Mahasphik, Stripriya, Balavana, Sukha,

Aishwarya, Arogya, Vitta, Sammana, Dhairya Yukta. 2. Its prime function is Garbhadana when expelled in the form of retah.

3. A healthy wealthy and wise progeny is the aspiration of all, and these qualities are inherited to the baby only when both the partners are healthy and possess healthy genomes i.e... Shudhha Shukra and Shudhha Artava. 4. The physical properties of Roopadravya Shukra (retah) called as Shudhha Shukra are- Sphatikabha, Drava, Snigdha, Bahu, Bahala, Madhugandhi, Sara, Ghruta Kshaudra Taila Nibha. Shukra with these attributes is Garbha Prada., 5. A sexual act is pleasurable and satisfactory when the man is with the features of Shukra Sara Purusha like Chyavana (motion or promoting delivery), Preeti (any pleasurable sensations or satisfaction), Harsha (erection of the genital organs or sexual excitement), Sankalpa (determination or desire). 6. Chyavana here could be co related to the strength of sexual performance. Preeti can be considered as the attainment of orgasm. Harsha in this context is related to the ability to attain sexual excitement and the ability to withstand the same. Similarly, the sexual act starts with the determination or the desire to indulge in a sexual relation or excitement is Sankalpa. As complete physical, mental and emotional involvement along with longing towards his female partner is equally important for attainment of orgasm.[6]

Pancha-bhoutik composition of Shukra:

Shukra is composed of four proto elements. In the explanation regarding this, preceptor Atreya states that Shukrais made of Vayu Agni Prithviand Ambuin the state of their excellence. While commenting on the above lines Chakrapaniclarifies that Akasha is also no doubt present in Shukra in view of its pervasive nature, but as it doesn't move together with other four Mahabhutas present in Shukra. in the course of ejaculation, it is not considered to be a distinct factor responsible for the composition of Shukra.[7]

Characteristics of sperm and semen: Normal consistency of semen is indicated by the characters like Drava (liquid), Picchila (viscous), Snigdha (unctuous) and Sara (fluid) due to various constituents of seminal plasma. The tendency to flow out (Pravana Bhava) also indicates the semen that is expelled during intense pleasure of coitous.

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.[8]

Shukradhatu is not nourished in proper way that is quantity and quality which leads to Shukra kshaya. It reflects in following symptoms of Shukra kshayaare Dourbalya, Pandutva, Medhravedana, Vrishanvedana, Shukra avisarga, chirat praseka, maithuna ashakti. Also the qualitative and quantitative vitiation of Shukra dhatu results in infertility.[9]

The drugs that promote healthy sexual life and can be used to treat different sexual ailments have been classified in different groups :- 1.Vajikarana (Aphrodisiac)

2. Shukra Janana(Formation of semen and sperm)
3. Shukra Pravartaka(Proper ejaculation)
4. Shukra Rechana (Compelete evacuation)
5. Shukra Stambhaka (Retention power improvers.
6. Shukra Shoshaka(absorbant or sucker)
7. Shukra Sodhana (Purifying).[10]

Vajikarana (Aphrodisiac) -One of the eight Branches of Ayurveda and a profound therapy, which corrects the semen defects and causes spermatogenesis, which improves individuals potency to accomplish production of a healthy offspring; gain of correct sexual arousal so as to execute uninterrupted sex and tissue nourishment so that semen is not diminished even as age advances is known as Vajikarana. The drug which provide sexual satisfaction are vajikarana e.g. Nagabala (sida humilis) and seeds of kapikacchu (mucuna pruriens).

Shukra janana / Shukra vriddhikar(Spermatogenetic): The drugs, which enhance production of sperm, are shukra janana. e.g. Mudgaparni (Rhaseolus trilolous), Mashaparni (Teramnus labialust) Shatavari (Asparagus racemosus), Aswagandha (Withania somnifera) Musali (Asparagus adscendens) Mamsa (meat), Ghrita (cow ghee) etc. Shukrala drugs can also be divided into two types i.e. Ushna Virya Shukrala and Shita Virya Shukrala. **Shukra pravartaka/Shukra Srutikar**. The drugs, which enhance the production as well as flow / ejaculation of semen are shukra pravartaka. e.g. milk, masha (black gram), amalaki (embelica officinalis), Strychnos nuxvomica, Cannabis sativa, Myristica fragrans, Cassia occidentalis, Musk and Self Control (Sankalpa-Psychological treatment) and phalamajja (material inside of seed of Bhallataka (semicarpus anacardium).

Shukra Sruti-Vruddhikar/ Shukra-Janaka-Pravartaka- The drugs having both Janaka and Pravartaka properties are known as Shukrajanaka-Pravartaka. Chakrapani has described it as Shukrasruti- Vriddhikara. E.g. Goghrita(cow ghee), Godhuma(wheat), Vigna mungo,

Microstylis wallichii, Roscoea procera, Mucuna pruriens and Asparagus racemosus **Shukra rechan**a The drugs, which cause evacuation of semen (shukra are shukra rechana. e.g. Fruits of Brihati (solanum indicum and Kantakari (solanum xanthocarpum. **Shukra Shoshaka**. The drugs, which dry up the semen. e.g. Haritaki (Terminalia chebula and Kalingad (water melon, Khadir. **Shukra sodhana** (Semen Purifier Purifier of semen are Shukra – Shodhana e.g. Kushtha (Saussurea lappa), Elavaluka (Brunus cerasus, Katphala (Myrica nagi, Samudraphena (Internal cell of sepia offinalis, gum of kadamba (Anthocephalus indicus, Ikshu (Saccharum officinarum, Kandekshu (Saccharum spontaneum, Kokilaksha (Asteracantha longifolia aand Ushira (vetiveria zizanioides.[10] **Shukra stambhaka** The drugs, which promote the retention power of a male partner during the sexual act. e.g. jatiphala (Myristica fragrans, Akarkarambh, Terminalia chebula, Sida cordifolia, Cinnamomum tamala, Anacyclus pyrethrum, Mucuna pruriens.[11]

Shukragni acts on anushukra and major shukra dhatu is formed. Since majja dhatu is present in the large bones (mahatasthisu). Acharya charak has explained the sneha (fatty) portion of majja produces shukra. The porosity in the asthi is produced because of the factors such as vata and akasha. Shukra comes out of asthi through these pores just as the water comes out of a new earthen vessel. Through the channels known as shukravaha srotamsi, this channel spreads shukra all over the body and remains present all over the body. During development of the embryo, the primordial germ cells transmigrate into the testes and become immature germ cells called spermatogonia which lie in two or three layers of the inner surfaces of the seminiferous tubules. The spermatogonia begin to undergo mitotic division, beginning at puberty, and constantly proliferate and differentiate through final stages of evolution to form sperm. The total period of spermatogenesis, from spermatogonia to spermatozoa, takes about 74 days.[12]

Human reproductive system is responsible for development of healthy progeny. Male and female reproductive organs function actively after puberty. Spermatogenesis and Oogenesis are the exhibitory functions of male and female reproductive systems respectively. Healthy reproductive system reflects upon people to have satisfying and safe sex life and gives an idea of them being capable of reproducing and the freedom to take decision of when and how often to perform it. Infertility in male and females is often treated by Shukra vriddhi kar and sukra srutikar dravyas.

One's sexual functioning is not only an expression of reproductive capacity and gender identity but also serves a major role in cementing the emotional bond with the primary partner. When this capacity is diminished or disrupted, the psychological implications can range from minor to catastrophic, depending on the individual history and situation. Therefore treatment of sexual dysfunction is imperative as it can have a profound effect on the well being of the individual.[13]

Male Reproductive System-The male reproductive system includes organs dealing with production, having supportive role, causing flow and movement of viable sperm that can reproduce by the act of copulation. The internal organs are the testes, the ductal system (epididymis and vas deferens), and bilateral seminal vesicles attached to the prostate. The penis is composed of erectile tissue and a unique set of helicine arteries and arteries capable of expansion. The urethra carries urine from the bladder and seminal fluid (ejaculate), which is a mixture of testicular sperm, prostatic secretions, and fluid from the seminal vesicles. The external penile structures, attached to the pubic bone by a suspensory ligament, can be in a flaccid or erect state. Two testicles lie within the scrotum; each is attached to a spermatic cord that contains the nerves and vessels to the testes.

Ejaculation is usually accompanied by pelvic floor contractions and the sexual sensation of orgasm. Spermatozoa are made within the testicles, matured in the epididymis (which acts as a sperm reservoir), and transported through the vas deferens to be mixed with nourishing seminal and prostatic fluid. Spermatozoa are made in the testicular Sertoli cells and testosterone is produced in the Leydig cells. These cells are activated by the anterior pituitary hormones follicle-stimulating hormone (FSH) and luteinizing hormone (LH) respectively. **Female reproductive system** consists of external and internal organs that function to provide sexual arousal and orgasm and the ability for vaginal penetration. The external genitalia, also called the vulva, include the mons pubis, the labia majora (outer lips of the vagina), the labia minora (the inner lips of the vagina), the vaginal opening (introitus), the urethral opening, the clitoris, and the perineum.

Similar to men, women have vascular erectile tissue (the clitoris) that becomes engorged with blood (tumescent) during sexual arousal. .. Sperm can then propel themselves through ovulatory cervical mucus into the cervix and up into the fallopian tubes where an ovulated ovum can be fertilized, potentially resulting in uterine embryo implantation and pregnancy. During sexual arousal, vasocongestion of the pelvic organs results in the formation of a

vaginal transudate through the estrogenized vaginal epithelial cells (vaginal lubrication), which is accompanied by vaginal elongation and uterine elevation ("tenting"). Near orgasm, the outer third of the vagina forms an orgasmic platform. At orgasm, the pelvic floor muscles rhythmically contract1. These physiological responses during female arousal (clitoral tumescence, vaginal lubrication, and uterine elevation) accommodate and assist comfortable vaginal penetration during sexual activities such as heterosexual intercourse.[14]

Genital arousal in men and women is a dynamic process that involves the coordination of neuronal circuits that result in a final vascular event, creating an elongated, rigid erection in men and tumescence of the clitoris in women from their flaccid or detumescent states. **Shukra srutikar** drugs like milk, amla, cannabis sativa etc. can have role in three types of genital arousal: psychogenic, reflexogenic, and nocturnal (rapid eye movement or REM sleep).

Ejaculation, the process of external semen expulsion, **Shukra pravatan** drugs have effect on this.

Orgasm is the release of pelvic vaso-congestion and neuromuscular tension most often felt locally in the genital area and experienced as pleasurable in the brain. The perceptual experience of orgasm, once achieved, does not vary much between men and women and can be modulated by several factors, primarily psychological as opposed to physical, such as emotional intimacy.[14]

Masha(black gram)- It belongs to Shimbidhanya varga, it has a major role in Vajikarana therapy (aphrodiasic treatment). Charakacharya in mashaparnaprabruthya adhyaya has discussed its importance in Vajikarana. He mentioned that if it consume with Sarkara (sugar), Kshoudra (honey) and Gritha (ghee) it will acts as an excellent aphrodiasic. It is Guru (heavy), Ushana (hot in potency), pacifies Vata dosha, Madhura (sweet taste), Sukravruddhi Vireka kruth (promote quantitative increase and ejaculation of semen.

Shigru (Moringa olifera) -It is Vata-Pittajith (decrease Vata and Pitta dosha), Snigdha (unctuous), Sita (cold potency), Guru (heavy to digest), Swadu (sweet taste), Sukrakruthparam (excellent in increases sexual potency).

Kukkuta Mamsa -It having Kashaya- Madhura rasa, Snigdha, Ushna and Guru guna. Tridosha hara, Bruhmana, chakshushya and Sukrala(increases sperm count).[15]

Prajasthapan Mahakashaya as described by Acharya Charak. Those drugs who help in conceiving by removing the uterine Doshas /disorders are known as Prajasthapan. The properties of these drugs are Kashaya, Madhura, Sheeta, Snigdha and Balya.[16] Shukral dravya means one which will increase quantity and potency of corresponding shukra dhatu.[17]

Reproduction is not local function of ovary to produce the ovum and fertilized ovum during sexual act. It is function of entire body, mind and intention towards the sexual act. Therefore support of this Dhatu Shukradharakala is present all over the body. Shukradhatu gives rise to valour and courageness, makes amorously disposed towards opposite sex, increase his strength and amativeness. In the society many females suffering from infertility also show the symptomsof have Irregular menses, PCOD, unovulation, etc which cause infertility because in such women function of Shukra dhatu is not clear.[18]

Aphrodisiacs can be classified by their mode of action into 3 types: those that increase: (1) libido, (2) potency, or (3) sexual pleasure. Various substances of animal and plant origin have been used in folk medicines of different cultures; some have been identified pharmacologically, allowing for understanding of their mechanisms of action.[19] The past 20 years of research on erectile physiology revealed the biochemical factors and intracellular mechanisms responsible for corpus cavernosal smooth muscle contraction and relaxation, and revealed that ED is predominantly a disease of vascular origin. Despite the increasing availability of effective conventional medical treatments, plant derived and herbal remedies continue to provide a popular alternative for men seeking to improve their sexual life.[20]

According to Ayurveda, aphrodisiacs are classified in the following categories; drugs which increase the quantity of semen or stimulate the production of semen such as Microstylis wallichii, Roscoea procera, Polygonatum verticillatum, Mucuna pruriens and Asparagus racemosus, drugs which purify and improve the quality of semen for example, Saussurea lappa, Myrica nagi, Sesamum indicum, Vetiveria zizanoides and Anthocephalus cadamba, drugs which improve ejaculatory functions for example, Strychnos nux vomica, Cannabis sativa, Myristica fragrans and Cassia occidentalis, drugs delaying the time of ejaculation or improving ejaculatory performance such as Sida cordifolia, Asparagus racemosus, Cinnamomum tamala, Anacyclus pyrethrum, Mucuna pruriens and Cannabis sativum, drugs arousing sexual desire, namely. Withania somnifera, Asparagus rcaemosus, Datura stramonium, Anacyclus pyrethrum, Hibiscus abelmoschus and opium.[21]

After reviewing various animal studies it was found that in a study Asparagus adscendens root extract "200 and 300 mg/kg doses orally for 30 days" significantly increased testes weight and testicular tubular diameter.[22] In another study the extract of Safed musli root against subfertile male albino rats -induced by cyproterone acetate. Evaluation of apoptosis profile was done using TUNEL assay, Western blot study, and DNA fragmentation study of testicular tissues; it revealed an increase in male reproductive ability by the increase of oxidative defense and maintained homoeostasis in the process of testicular apoptosis.[23] Mondia whitei family Periplocaceae its aqueous extract at "400 mg/kg BW/day dose for 8 days" showed to increase sperm density in cauda epididymis in rats.[24] Monsonia angustifolia E. Mey. ex. A. Rich. the crude aqueous extracts of M. angustifolia was administered to male rats, it revealed that the extract different dose markedly ($p < .05$) increased serum hormone concentrations.[25] In this way many anatomical and physiological parameters were observed to understand action on Reproductive System.

Effects of Oxidative Stress on Female Reproductive Functions

Reactive oxygen species appear to have physiological role in female reproductive tract in many different processes such as: oocyte maturation, luteal regression, and endometrial shedding. It may affect the ovulation, fertilization, and implantation. ROS not only alters most types of cellular molecules but also induces early embryonic developmental block and retardation.[26]

CONCLUSION

Reproduction is the essential function that allows species continuity. Fertility is generally used to indicate the actual reproductive performance of a female or male Its dysfunction leads to negative consequences on the animal productivity.[26] Poor sexual performance is a significant factor in human life since it affects man in numerous ways. It is significant that issues surrounding poor sexual performance and virility are unraveled in various economies of the world. Several plants have proven useful in the management of sexual disorders throughout history, even herbs and spices have been used to enhanced sexual activities in various parts of the world. Isolation and characterization of the active constituents of plants used in improvement of sexual performance and virility can cause a dynamic change in the world today.[27] The search for natural supplement from medicinal plants is being intensified probably because of its fewer side effects, its ready availability, and less cost. A variety of botanicals are known to have a potential effect on the sexual functions, supporting older

claims and offering newer hopes. This review, while evaluating various factors that control sexual function, identifies a variety of botanicals that may be potentially useful in treating ailments of Reproductive System.[28]

REFERENCES

1. PIJAR/VOLUME-I/ISSUE –III/January-February-2017 Page 70 ISSN-2456-4354 Review Article Concept and application of shukravaha Srotas Dr. Aqeeb Javeed1, Dr.Chate vasudev2, Dr. Shreevathsa3 1 PG Scholar, 2Reader, 3 Professor and H.O.D. Department of PG Studies in Ayurveda samhitha and Siddhanta, GAMC, MYSORE 2. Acharya, Pt. Y T: Caraka Samhita, Ayurveda Dipika Commentry by Cakrapanidutta, Rastriya SanskritSamsthan Reprint 2006 (ch.chi 2/16-17))
2. Acharya, Pt. Y T: Caraka Samhita, Ayurveda Dipika Commentry by Cakrapanidutta, Rastriya Sanskrit Samsthan Reprint 2006 (ch.chi 15/32)
3. Bramhanand Tripathi, Agnivesha, Charaka Samhita with Ayurveda Dipika commentary of Chakrapani, Sharira sthana, chapter no. 15, verse no16. Reprint edition, Published by Chaukhamba Surbharati Prakashan, Varanasi; 2005 p.553, 554.
4. Dharitri Purohit1 Ramadevi G2, Arpana Jain3 1PG Scholar, 2 A REVIEW ON SHUKRA DUSHTI AND DISORDERS OF DIFFERENT PHASES OF SEXUAL RESPONSE CYCLE, IAMJ, Professor, 3Asst. Professor Dept. of Prasuti Tantra and Stree Roga SDM Ayurveda College and Hospital Udupi, Karnataka, India.
5. Vaidya Jadavji Trikamji editor Acharya, Sushruta Samhita, Sushruta Sutra Sthana Chapter 4, verse no. 4 Reprint ed. Chaukhambha Surabharati Prakashana, Varanasi, 2008; (Su.Sa. 2/5)
6. REVIEW ARTICLEJuly-Aug 2019 Journal of Ayurveda and Integrated Medical Sciences | July - Aug 2019 | Vol. 4 | Issue 4 236 Concept of Shukra Dhatuwith special reference to Dhatu Sarata Dr. Abhishek Acharya1, Dr. Vaidehi Raole2, Dr Sunil P. Nikhate3
7. International Ayurvedic Medical Journal, (ISSN: 2320 5091) (October, 2017) 5(10) PHYSIOLOGICAL STUDY OF SHUKRA DHATU- A REVIEW Sanjay Kumar Shahu1, Ajay2, Gugulothu Ramesh3, HemrajMeena4.
8. AYUSHDHARAISSN: 2393-9583 (P)/ 2393-9591 (O)An International Journal of Research in AYUSH and Allied Systems
9. AYUSHDHARA | November -December2018| Vol 5| Issue 6THE STUDY OF ETIOPATHOGENESISIN SHUKRAKSHAYARaviteja Mane1*, Shital S. Mane1, Mandave Kundalik2

10. Title:Rational use of ayurvedic aphrodisiacs, Rajendra Prasad, Punarnav Journal https://docplayer.net/42980910-Month-march-april-2015-volume-2-issue-6-issn-title-rational-use-of-ayurvedic-aphrodisiacs-rajendra-prasad.html
11. Adhamalla and Kashirama commentary on Sharngadhara Samhita, Purvardha, Khilasthana 4/15-17, Chaukambha Orientalia; Varnasi, 2018; Pg- 38.
12. Journal of Advanced Scientific Research Available online through http://www.sciensage.info SHUKRA DHATU OF AYURVEDA AND ITS AFFILIATES IN MODERN PERSPECTIVE: A REVIEW Rakesh Roushan*, Mula Ram Suthar Dept of Kriya Sharir, Ch. Brahm Prakash Ayurved Charak Sansthan, New Delhi, India. *Corresponding author: rakesh3151@gmail.com, 2019; 10(4): 32-39 13.Dr. Kishor Patvardhana ed, Human Physiology in Ayurveda, Pg 5865 PP74, 1st edition 2005, Chaukhambha Oriantelia Varanasi.
13. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5340504/ Neural Control and Physiology of Sexual Function: Effect of Spinal Cord Injury Andrei Krassioukov, MD, PhD, FRCPC[1,2,4,5] and Stacy Elliott, MD[1-,3,5]International Journal of Health Sciences and Research www.ijhsr.org ISSN: 2249-9571 Review Article Ayurvedic Food Supplements for Sexual Health: A Review Article Dr. Athira K.S1 , Dr. T.B Tripathy2 , Dr. Bargale Sushant Sukumar3.
14. www.ijhsr.org ISSN: 2249-9571 Review Article Ayurvedic Food Supplements for Sexual Health: A Review Article Dr. Athira K.S1, Dr. T.B Tripathy2, Dr. Bargale Sushant Sukumar3.
15. A LITERATURE REVIEW OF PRAJASTHAPANA MAHAKASHAYA AND VANDHYATVA Name of author: Dr. Anuja A. Kulkarni 1 Professor & H.O.D. Dept. of Strirog avm Prasuti Tantra, Sant Gajanan Maharaj Ayurved Medical College, Mahagaon, Dist- Kolhapur, Maharashtra State, India. Dr. Vinaya Babasaheb Shetti.2 PG Scholar, S.G.R. Ayurved Mahavidhyalaya, Solapur. Maharashtra, India.2020 IJCRT | Volume 8, Issue 10 October 2020 | ISSN: 2320-2882
16. Monier Williams. Sanskrit to English dictionary, page no 614, Motilal Banarsidas Publishers PVt. LTD, New Delhi, 1990.
17. International Ayurvedic Medical Journal, (ISSN: 2320 5091) (October, 2017) 5(10) PHYSIOLOGICAL STUDY OF SHUKRA DHATU WITH RESPECT TO INFERTILITY IN FEMALE Urmila R.S. Maurya1, Maneesha U. Kothekar carried out (
18. Aphrodisiacs past and present: a historical reviewP Sandroni, 2001 Oct; 11(5): 303-7 doi:10.1007/BF02332975

19. Bivalacqua TJ, Champion HC, Hellstrom WJ, Kadowitz PJ. Pharmacotherapy for erectile dysfunction. *Trends Pharmacol Sci.*, 2000; 21: 484–9. [PubMed] [Google Scholar]
20. *Chemistry and Pharmacology of Aphrodisiac Plants: A Review*. Availablefrom:https://www.researchgate.net/publication/327582326_Chemistry_and_Pharmacology_of_Aphrodisiac_Plants_A_Review [accessed Nov 23 2021].
21. Bansode FW, Arya KR, Singh RK, Narender T. Dose-dependent effects of Asparagus adscendens root (AARR) extract on the anabolic, reproductive, and sexual behavioral activity in rats. *Pharmaceutical Biology*, 2015; 53: 192–200. [PubMed] [Google Scholar]
22. Ray S, Chatterjee K, De D, Ghosh D. Bioefficacy of hydromethanolic extract of tuber of Chlorophytum borivilianum (Safed Musli) for the management of male infertility in cyproterone acetate-treated albino rats. *Andrologia*, 2014; 46: 659–671. [PubMed] [Google Scholar]
23. Rajender S, Akhand Pratap S. Potent natural aphrodisiacs for the management of erectile dysfunction and male sexual debilities. *Frontiers in Bioscience*, 2012; S4(1): 167–180. [PubMed] [Google Scholar]
24. Fouche G, Afolayan AJ, Wintola OA, Khorombi TE, Senabe J. Effect of the aqueous extract of the aerial parts of Monsonia angustifolia E. Mey. Ex A. Rich., on the sexual behaviour of male Wistar rats. *BMC Complementary and Alternative Medicine*, 2015; 15: 343. [PMC free article] [PubMed] [Google Scholar]
25. Guerin P, Mouatassim SE, Menezo Y. Oxidative stress and protection against reactive oxygen species in the pre-implantation embryo and its surroundings. Article Human Reproduction, 2001; 7: 175-189.
26. *Chemistry and Pharmacology of Aphrodisiac Plants: A Review*. Available from: https://www.researchgate.net/publication/327582326_Chemistry_and_Pharmacology_of_Aphrodisiac_Plants_A_Review.
27. Exploring scientifically proven herbal aphrodisiacs, Pharmacognasy review, 2013 Jan-Jun; 7(13): 1–10. doi: 10.4103/0973-7847.112832PMCID: PMC3731873,PMID: 23922450, Sabna Kotta, Shahid H. Ansari,[1] and Javed Ali