

VRISHYA AND VAJIKARANA - EXPLORING ANCIENT SCIENCE OF APHRODISIACS

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Abstract: Introduction: Vajikarana is one of the eight specialities of Ashtang Ayurveda dealing with the management of pathophysiology of spermatogenesis and healthy sexual potentiation. This aphrodisiac therapy is advocated for various sexual and reproductive disease i.e., *Klaibya* or Erectile dysfunctions, *Bandhyatva* or Infertility, *Shukraghata Vata* or azospermia and premature ejaculation. *Vrishya*, a synonym of *Vajikara*, is the technical term indicating spermatogenic and aphrodisiac effect of a *dravya* (foods, herbs, spices and Medicinal plants) including audio-visual, socio-religious effects/ sexual behaviour factors/ constants). Currently, the importance of this branch has increased manifold, as more and more people are reporting to clinics with various disorders related to seminal parameters and sexual dysfunction. **Material and Methods:** Various drugs mentioned under these therapies were searched including scientific data pertaining to their efficacy and probable mode of action. The search was limited to Ayurveda classics, books and published works from pubmed as well as non-pubmed indexed journals including google scholar database. The present review is mainly focussed on *brihatryi* (*Charaka Samhita*, *Sushruta Samhita* and *Ashtang*) for elaborate understanding of the concept of *Vrishya* and *Vajikarana*. The texts *Sarangdhar Samhita* and *Bhavprakash Nighantu* were searched for the drugs indicated as *vrishya* and *vajikarana* properties. **Results:** Analyses of the textual data revealed that *Vrishya dravyas* act as *Vajikara* also, but all *Vajikara dravyas* do not possess *Vrishya* property. This appears due to predominance of stimulant action on *Sukravaha Samsthana* in *Vajikara dravyas* while *Vrishya* has mainly quantitative and qualitative effect on *Sukra*. These drugs also act on higher centres of the brain which helps to alleviate anxiety associated with sexual performance as revealed by the published scientific data. Aphrodisiacs also modulate the level of the pituitary hormones FSH and LH. The drugs possessing these properties have been tabulated in the text. **Conclusion:** *Vajikarana* is the therapy while *Vrishya* is the property (*Karma*) of the drug. *Vrishya* drugs are successful in treating conditions of reproductive disorders and sexual performance and they have an effect on pituitary-gonadal axis. Investigations in validation of these drugs will go a long way in management of infertility.

Keywords: Aphrodisiac, Ayurveda, Medicinal Plants, *Sukra*, *Vajikarana*, *Vrishya*

INTRODUCTION

The healthy life has three main pillars a balanced diet, proper sleep and a healthy sexual and marital life (**Charaka Samhita, Sutra Sthana 11/35**). [1] The importance and relevancy of the third pillar lies in the fact that an entire discipline has been mentioned among the eight specialized branches of Ayurveda known as *Vajikarana Tantra*. It has been described as a branch of *Ashtang Ayurveda*, which deals with the management of

defective semen and spermatogenesis along with sexual potentiation (**Sushruta Samhita Sutra Sthana 1/16**). [2] In the present era also, the importance of this branch has increased manifold, as more and more people are reporting to clinics with various disorders related to seminal parameters and sexual dysfunction. This trend is on the rise because of the competitive and stressful working environment of the people which also exhibits a negative impact on the sexual life of the people.

Studies have also indicated a decline in the concentration and motility of sperm and in the percentage of morphologically normal spermatozoa in fertile men that is independent of the age of men (Carlsen E, Giwercman A, Keiding N, Skakkebaek NE, 1992). [3] Finding the solution to this emerging problem across the Ayurveda texts, one can find various references to the use of *Vrishya* and *Vajikarana* therapy for problems related to sexual life and procreation. This therapy claims to improve the function of the reproductive organs and vitalizes reproductive tissues increasing semen count and strengthening sperm motility in men and making eggs more viable for conception in women. *Vajikarana* enhances not only the quality and longevity of one's individual life but also the health and vitality of his or her offspring.

Numerous single drugs as well as compound formulations derived either from herbs, metals or animal sources have been described in the texts which have an incremental effect on the libido as well as on the level of seminal parameters. No thorough review study has been done to understand the different classification of aphrodisiacs and the terminology used which find mention in Ayurveda. A better understanding of the concepts of *Vrishya* and *Vajikarana* as described in the Ayurveda texts is required before researches are made to generate scientific evidence and validate these claims. This discussion aims at enlightening the reader about the Ayurveda concepts and terminology of aphrodisiac therapy and to update the available scientific information on various herbal drugs, which have already been evaluated for use as an aphrodisiac.

MATERIAL AND METHODS

The present review is mainly focussed on *brihatryi* (*Charaka Samhita*, *Sushruta Samhita* and *Ashtang*) for elaborate understanding of the concept of *Vrishya* and *Vajikarana*. Various drugs mentioned under *vrishya* and *vajikarana* were searched from the texts *Sarangdhar Samhita* and

Bhavprakash Nighantu and published works from pubmed as well as non-pubmed indexed journals including google scholar database

The concept of *Vrishya*

The term *Vrishya* has been used widely in the Ayurveda texts in relation to potentiation of sexual vigour or improvement in seminal parameters. The literal meaning of the word *Vrishya* stands for the animal, bull; which competes with his fellow bulls and cohabits with multiple partners on the same day. Thus, '*Vrishya*' indicates the substances by virtue of which a person is capacitated to act sexually like *Vrishya* (bull). However, the term *Vrishya* has also been used as a synonym for *Vajikarana* at some places (CCS 1/1/5-6). [4] The most apt description of *Vrishya* has been given by *Cakrapani* where it has been described as the substance which either facilitates ejaculation of semen to exterior of the body or which facilitate and increase the production of *Sukra* (CCS 2/4/51).[5]

Vrishya and *Vajikarana*

The terms *Vrishya* and *Vajikarana* are sometimes used interchangeably, but different definitions have been given for these terms by Ayurveda scholars as shown in **Table 1**. The method of therapy which improves the potential of a man for getting offspring for the continuity of his lineage; treats all types of disorders of *Sukra* (semen); causes instantaneous sexual excitation, performance and nourishes the tissue elements, is called *Vajikarana* (CCS 1/1/9-12).[6] It is also described as '*Sukra pravartakam*' i.e. which promotes movement of *Sukra* out of the body (SSS 45/49). [7]

The medicines or therapy by which the man becomes capable of sexual intercourse with greater strength, which endears him to women and which nourishes the body of the person is known as *Vajikarana*. It is the best promoter of strength and vigor (AHUS 40/3). [8]

Table 1. *Vajikarana* as described by different *Acharyas*

<i>Charaka Samhita</i>	Therapy which improves potential of a man for getting offspring, treats all types of disorders of <i>Sukra</i> (semen); causes instantaneous sexual excitation, performance and nourishes the tissue elements.
<i>Sushruta Samhita</i>	Described as ' <i>Sukra pravartakam</i> ' i.e. which promotes movement of <i>Sukra</i> out of the body.
<i>Ashtanga Hridaya</i>	The medicines or therapy by which the man becomes capable of sexual intercourse with greater strength, and nourishes the body of the person. It is the best promoter of strength and vigor.

Hence, *Vajikarana* prescribed the therapeutic use of various aphrodisiacs and tonic preparations for enhancing the vigor and reproductive capabilities of men that also strengthens other body tissues (*dhatu*) like muscles, bones and blood. *Vajikarana* is mainly related with therapies concerning specific remedies for male infertility and impotence as well as female infertility. Apart from being good aphrodisiacs, these induce an immediate sense of pleasurable excitement, along with increased fertile seminal secretions, even in an ageing person. Concurrently, *Vrishya* has been described as '*Sukra janakam*' meaning any substance which increases spermatogenesis (SSS 45/49). [9] *Vrishya dravyas* increase and potentiate the *Sukra* in the body (SCS 26/6-8). [10] These *dravya* may act as *Vajikara* also, but all *Vajikara dravyas* do not possess *Vrishya* property, because stimulant action on *Sukravaha Samsthana* is predominant in *Vajikara dravyas* while *Vrishya* is beneficial mainly in increasing the *Sukra* in quantitative and qualitative measures. *Bhavaprakasha* has also explained *Vrishya* as *Sukravridhdhikara* (**Bhavprakash Purvakhand 3/191**) [11] which mean that it increases the quantity and quality of *Sukra* in the human body thus improving seminal parameters. This description is also in concurrence with that given by *Dalhana*.

Vrishya Chikitsa states the reason for sexual inefficiency and directs the use of several aphrodisiac herbs and minerals to enhance the vitality. Targeted at improving the sexuality of an individual, this aphrodisiac therapy aims at promoting the quality of the germinative tissues of an individual and is used to treat impotency and increases vitality. [12]

A few of the drugs mentioned in ancient texts and used in *Vrishya Chikitsa* have been mentioned in **Table 2**.

The effect of these medicinal preparations has been correlated using flowery language and compared with the potency of a horse or a pied crested cuckoo (*Chatak* bird).

The Concept of Sukra

According to Ayurveda texts, *saptadhatu* (seven body elements) are produced in a kind of progressive evolving metamorphosis, beginning with *Rasa-dhatu* and ending with the seventh *Sukra-dhatu* which is also considered *sara* of all other *dhatu* (CCS 15/16-17).[13] This metamorphosis is brought about by the action of *Sukra Dhatvagni* on the essence of *Majja*. Thus, *Majja dhatu* evolves into *Sukra dhatu* (SSS 14/10,(CCS 15/32).[14,15]

Sukra is the substance which is responsible for bodily activities especially reproduction. Various synonyms have been used to denote *Sukra dhatu* on the basis of its appearance and functions it performs in the body (**Table 3**).

It is evident from the description and properties of *Sukra* that it refers to the seminal secretions or rather semen in the human body. *Sukra* is the entity through which the actions of *Vrishya* and *Vajikarana* are elicited in the body. The production of *Sukra* can be explained under the terms *Janaka* and *Pravartaka* and it also justifies the properties of *Vrishya* drugs.

Aims and Objectives of Vajikarana Chikitsa

(CCS 1/1/9-12), (CCS 2/2/30), (SCS26/39) [16,17,18]

The aims and objectives due to which *Vajikarana* treatment gained importance was procreation, which is to produce a healthy offspring. A person unable to reproduce an offspring was considered socially unacceptable and had to face social ostracism and disgrace (CCS 2/1/16). [19] Another objective of the treatment

Table 2. Drugs advocated for use as *Vrishya*

S. No.	Drug	Uses	Reference
1.	<i>Brihamni Gutika</i>	Best for <i>Vrishya</i> , person indulges in act like a horse	*Ca.Ci.1/2/1-24
2.	<i>Vajikarana Ghrita</i>	Best for erection	Ca.Ci. 1/2/1-33
3.	<i>Vrishya Kshira</i>	Best for <i>Vrishya</i>	Ca.Ci.1/2/2-18
4.	<i>Vrishya Ghrita</i>	Best for <i>Vrishya</i> , <i>Balya</i>	Ca.Ci.1/2/2-21
5.	<i>Vrishya Shatavari Ghrita</i>	<i>Vrishya</i>	Ca.Ci.1/2/3-18
6.	<i>Vrishya Pippali Yoga</i>	Useful for erectile dysfunction	Ca.Ci.1/2/3-12
7.	<i>Apatyakar Ghrita</i>	<i>Vrishya</i> , increases <i>bala</i>	Ca.Ci. 1/2/4-25
8.	<i>Vrishya Gutika</i>	<i>Vrishya</i> , increases sexual potency	Ca.Ci.1/2/4-32

*Ca.Ci- Caraka Samhita Chikitsa Sthana

Table 3. Synonyms of *shukra*

Synonym	Description
<i>Bijam</i> (Seed)	One which has the capacity to induce new growth / generation.
<i>Retas</i> (Ejaculate):	Which is ejaculated at the time of coitus
<i>Ananda Samudbhava</i> (born out of pleasure):	That is ejaculated at the time of intense pleasure or orgasm.
<i>Rupa Dravya</i>	That which imparts structure to the <i>Atma</i>
<i>Pumstva</i> (Fertility)	Capacity to procreate
<i>Paurusam</i> (Virility)	Inherent character of <i>Purusa</i>
<i>Virya</i> (Potency):	By virtue of which action is manifested

was enhancement and maintenance of bodily strength and to achieve sexual gratification by remaining healthy in sexual performance. However, the main aim of *Vajikarana* is always successful copulation for healthy reproduction, with sexual pleasure being just an additional benefit; therefore it is considered a part of 'eugeney.' This therapy is also prescribed for various sexual and reproductive disease i.e., *Klaibya* or Erectile dysfunctions, *Bandhyatva* or Infertility, *Shukragata Vata* or azospermia and premature ejaculation (**SSS 1/16**). [20] *Vajikarana chikitsa* mandates following the principles of healthy living as per the directions mentioned in Ayurvedic classics. This treatment involves various methods of *snehana* (oleation), *swedan* (sweating), *shodhan* (body cleansing) through *vaman* (emesis) and *virechan* (purgation). The *Shodhan* therapy is followed by oral medication based on the *prakriti* of the individual (*doshic* constitution of body) and certain herbal and herbomineral combinations are administered.

Drugs for *Vrishya* and *Vajikarana* therapy: Properties and Classification

Ayurveda has its own system of classifying the drugs based on their certain characteristics and actions they perform on the human body. The drugs which possess *Madhura* (sweet), *Snigdha* (unctuous), *Jivana* (promoters of life), *Brimhana*

Table 5. Classification of *Vrishya* drugs.

According to <i>Cakrapani</i>	According to <i>Dalhana</i>	According to <i>Sharangdhara</i>
<i>Sukravridhdhikara</i>	<i>Sukrajanak</i>	<i>Sukrala</i>
<i>Sukrasrutikara</i>	<i>Sukra pravartaka</i>	<i>Sukrajanaka</i>
<i>Sukrasrutivridhdhikara</i>	<i>Sukra janaka pravartaka</i>	<i>Sukra rechaka</i>
		<i>Sukra stambhaka</i>
		<i>Sukra shoshak</i>

Table 4. Physiological considerations of *Sukra* as per classical texts

Features	Characteristics
Appearance	a) <i>Shukla</i> b) <i>Ghritha sannibham</i> c) <i>Sphatika sannibha</i> d) <i>Kshaudra sannibha</i> e) <i>Taila sannibha</i>
Consistency	a) <i>Dravam</i> (Liquid) b) <i>Snigdha</i> (unctuous) c) <i>Picchila</i> (Viscous) d) <i>Sara</i> (Fluid)
Taste	a) <i>Madhuram</i> (Sweet)
Odour	a) <i>Madhugandhi</i> b) <i>Avisra</i>
Density	a) <i>Guru</i> (heavy) b) <i>Ghanam</i> (Concentrated) c) <i>Sandram</i> (Concentrated) d) <i>Bahal</i> (thick)
Volume	a) <i>Bahu</i> (Abundant) b) <i>Bahal</i> (Thick)
pH	<i>Avidhahi</i>
Functions of <i>Sukra</i>	<i>Garbhakara</i> (Produces Garbha) <i>Chyavana</i> (Sensation of ejaculation) <i>Priti</i> (Fondness) <i>Dehabalam</i> (Strengthens the body)
Quantity of <i>Sukra</i>	According to <i>Caraka</i> – ½ <i>Anjali</i> According to <i>Bhela</i> - 1 <i>Anjali</i>

(nourishing), *Guru* (heavy) properties are called *Vrishya* (**CCS 2/4/36**) [21] and can be used for the purpose of *Vajikarana* also. Many correlating terminologies have been given in the texts which describe the appearance, consistency, taste, odour, density of the *Sukra* (**Table 4**). *Vrishya* drugs have been classified by different scholars on the basis of their mode of action and effect on the *Sukra dhatu*. (**Table 5**) A compilation of drugs possessing *vrishya* or *vajikarana* properties has been shown in **Table 6**. In view of the classification of *Vrishya* drugs, following types are explained: (**SCS 26/6-8**) [22]

1. *Sukra janaka*. The drugs which facilitate and increase the production of *Sukra*. *Cakrapani* includes these drugs under *Sukra vriddhikara*, while

Table 6. Drugs possessing *Vrishya* and *vajikarana* properties

S.No.	Name of Drug	Botanical name	Family	Properties
1	<i>Aamra</i>	<i>Mangifera indica</i>	Anacardiaceae	<i>Vrishya</i>
2	<i>Ajmoda</i>	<i>Apium graveolens</i>	Umbelliferae	<i>Vrishya, Balakaraka</i>
3	<i>Amalaki</i>	<i>Embelia ribes</i>	Euphorbiaceae	<i>Vrishya, Rasayana</i>
4	<i>Aswagandha</i>	<i>Withania somnifera</i>	Solanaceae	<i>Sukrala</i>
5	<i>Badama</i>	<i>Pyrus malus</i>	Rosaceae	<i>Sukrakrita, Vrishya</i>
6	<i>Badara</i>	<i>Zizyphus sativa</i>	Rhamnaceae	<i>Sukrala</i>
7	<i>Bhallataka</i>	<i>Semecarpus anacardium</i>	Anacardiaceae	<i>Vrishya, Brimhana</i>
8	<i>Candana</i>	<i>Pterocarpus santalinus</i>	Fabaceae	<i>Vrishya</i>
9	<i>Chhilhint</i>	<i>Cocculus hirsutus</i>	Menispermaceae	<i>Vrishya</i>
10	<i>Damnak</i>	<i>Artemisia vulgaris</i>	Asteraceae	<i>Hridya, Vrishya</i>
11	<i>Darusita</i>	<i>Cinnamomum zeylanicum</i>	Lauraceae	<i>Sukrala, Balya</i>
12	<i>Draksha</i>	<i>Vitis vinifera</i>	Vitaceae	<i>Vrishya</i>
13	<i>Dugdika</i>	<i>Euphorbia hirta</i>	Euphorbiaceae	<i>Vrishya</i>
14	<i>Erka</i>	<i>Typha elephantia</i>	Typhaceae	<i>Vrishya</i>
15	<i>Ghritakumari</i>	<i>Aloe vera</i>	Liliaceae	<i>Brimhana, Balya, Vrishya</i>
16	<i>Gokshura</i>	<i>Tribulus terrestris</i>	Zygophyllaceae	<i>Vrishya, Pushtikara</i>
17	<i>Gunja</i>	<i>Abrus precatorius</i>	Fabaceae	<i>Vrishya, Balya</i>
18	<i>Jiraka</i>	<i>Cuminum cyminum</i>	Umbelliferae	<i>Vrishya, Balya, Garbhashya-shudhi</i>
19	<i>Kadali</i>	<i>Musa sapientum</i>	Musaceae	<i>Vrishya, Brimhana</i>
20	<i>Kapikachhu</i>	<i>Mucuna prurita</i>	Fabaceae	<i>Vrishya, Brimhana</i>
21	<i>Karpas</i>	<i>Gossypium herbaceum</i>	Malvaceae	<i>Vrishya</i>
22	<i>Karpura</i>	<i>Cinnamomum camphora</i>	Lauraceae	<i>Vrishya, Chakshusya</i>
23	<i>Kasturi</i>	<i>Moschus moschiferus</i>	-	<i>Sukrala</i>
24	<i>Kharbooja</i>	<i>Cucumis melo</i>	Cucurbitaceae	<i>Vrishya</i>
25	<i>Kharjura</i>	<i>Phoenix sylvestris</i>	Arecaceae	<i>Balya, Sukravridhikara</i>
26	<i>Khas khas</i>	<i>Papaver somniferum</i> (Poppy seeds)	Papaveraceae	<i>Balya, Vrishya</i>
27	<i>Kinjala</i>	<i>Nelumbo nucifera</i>	Nymphaeaceae	<i>Vrishya</i>
28	<i>Kokilaksha</i>	<i>Asteracantha longifolia</i>	Acanthaceae	<i>Vrishya</i>
29	<i>Kuja</i>	<i>Rosa moschata</i>	Rosaceae	<i>Vrishya</i>
30	<i>Kushmanda</i>	<i>Benincasa hispida</i>	Fabaceae	<i>Balakara</i>
31	<i>Kutha</i>	<i>Sausurrea lappa</i>	Asteraceae	<i>Sukrala</i>
32	<i>Lashuna</i>	<i>Allium sativum</i>	Liliaceae	<i>Brimhana, Vrishya</i>

Sharangadhara mentioned them as *Sukrala*. Examples are *Withania somnifera*, *Asparagus racemosus*, *Vigna mungo*, *Mamsa*, *Ghrta*. *Sukrala* drugs can also be divided into two types i.e. *Ushna Virya Sukrala* and *Shita Virya Sukrala*.

2. Sukra Pravartaka.: The drugs which initiate the ejaculation of semen to the exterior of the body are termed as *Sukrapravartaka*. *Cakrapani* includes such drugs under *Sukrasrutikara*. Eg. *Strychnos nuxvomica*, *Cannabis sativa*, *Myristica fragrans*,

Table 6. Continued.....

S.No.	Name of Drug	Botanical name	Family	Properties
33	<i>Madhuka</i>	<i>Bassia latifolia</i>	Sapotaceae	<i>Brimhana, Balya, Sukrakara</i>
34	<i>Makhaana</i>	<i>Euryale ferox</i>	Nymphaeaceae	<i>Vrishya, Balya</i>
35	<i>Malika</i>	<i>Jasminum sambac</i>	oleaceae	<i>Vrishya</i>
36	<i>Mansarohini</i>	<i>Soymida febrifuga</i>	Meliaceae	<i>Vrishya,</i>
37	<i>Masa</i>	<i>Phaseolus mungo</i>	Fabaceae	<i>Balya, Sukrala, Brimhana</i>
38	<i>Masaparni</i>	<i>Teramnus labialis</i>	Fabaceae	<i>Sukra-bala vridhi</i>
39	<i>Mochrasa</i>	Gum of <i>Bombax malabaricum</i>	Bombacaceae	<i>Vrishya</i>
40	<i>Musli</i>	<i>Curculigo orchoides</i>	Amaryllidaceae	<i>Vrishya, Brimhana, Virya-vridhi</i>
41	<i>Nakha</i>	<i>Helix aspera</i>	-	<i>Sukrala</i>
42	<i>Narikela</i>	<i>Cocos nucifera</i>	Arecaceae	<i>Brimhana</i>
43	<i>Palandu</i>	<i>Allium cepa</i>	Liliaceae	Increases <i>Bala-virya</i>
44	<i>Palash</i>	<i>Butea frondosa</i>	Fabaceae	<i>Vrishya</i>
45	<i>Panasa</i>	<i>Artocarpus integrifolia</i>	Moraceae	<i>Vrishya</i>
46	<i>Pippali</i>	<i>Piper longum</i>	Piperaceae	<i>Vrishya, Rasayana</i>
47	<i>Prisnaparni</i>	<i>Uraria picta</i>	Fabaceae	<i>Vrishya</i>
48	<i>Priyala</i>	<i>Buchanania latifolia</i>	Anacardiaceae	<i>Vrishya</i>
49	<i>Putrajiva</i>	<i>Putranjiva roxburghii</i>	Euphorbiaceae	<i>Garbhkara, Vrishya</i>
50	<i>Rajadana</i>	<i>Mimusops hexandra</i>	Sapotaceae	<i>Vrishya, Balya</i>
51	<i>Saindhava</i>	Rock salt	-	<i>Vrishya</i>
52	<i>Sarpata</i>	<i>Sachharum munja</i>	Gramineae	<i>Vrishya</i>
53	<i>Satavari</i>	<i>Asparagus racemosus</i>	Liliaceae	Increases <i>Sukra-stanya</i>
54	<i>Satpatri</i>	<i>Rosa centifolia</i>	Rosaceae	<i>Sukrala</i>
55	<i>Shilarasa</i>	<i>Liquidamber orientalis</i>	Hamamelidaceae	<i>Sukrala, Vrishya</i>
56	<i>Sringataka</i>	<i>Trapa bispinosa</i>	Trapaceae	<i>Vrishya</i>
57	<i>Sunthi</i>	<i>Zinziber officinale</i>	Zingiberaceae	<i>Vrishya</i>
58	<i>Tala</i>	<i>Borassus flabellifer</i>	Areaceae	<i>Sukrala</i>
59	<i>Tooni</i>	<i>Cedrela toona</i>	Meliaceae	<i>Vrishya</i>
60	<i>Vamshlochan</i>	<i>Bambusa arundinacia</i>	Poaceae	<i>Balya, Vrishya, Brimhana</i>
61	<i>Varahikanda</i>	<i>Dioscorea bulbifera</i>	Dioscoreaceae	<i>Sukra-ayu vardhaka</i>
62	<i>Vidarikanda</i>	<i>Ipomoea digitata</i>	Dioscoreaceae	<i>Brimhana, Stanya-sukra vardhak</i>
63	<i>Vidhara</i>	<i>Argyria speciose</i>	Convolvulaceae	<i>Vrishya</i>
64	<i>Yashtimadhu</i>	<i>Glycyrrhiza glabra</i>	Fabaceae	<i>Sukrala</i>

Cassia occidentalis and, musk and Self Control (Sankalpa-Psychological treatment)

3. Sukra-janaka-Pravartaka.: Drugs having both *Janaka* and *Pravartaka* properties are known as *Sukrajanaka-Pravartaka*. *Cakrapani* has

described it as *Sukrasruti- Vridhikara*. e.g. *Goghrita, Godhuma, Vigna mungo, Microstylis wallichii, Roscoeia procera, Mucuna pruriens* and *Asparagus racemosus*

4. Sukra Stambhaka. (Sarangdhara Samhita Purvakhanda 4/17) [23]: Drugs which help in improving the capability of ejaculatory control during sexual act. E.g. *Terminalia chebula*, *Sida cordifolia*, *Asparagus racemosus*, *Cinnamomum tamala*, *Anacyclus pyrethrum*, *Mucuna pruriens*

Basis of sexual behaviour: Modern perspective

Sexual arousal in a person is dependent upon degree of stimulation, whether psychic or physical. Erection is caused by parasympathetic impulses that pass from the sacral portion of the spinal cord through the pelvic nerves. These parasympathetic nerve fibres, in contrast to most other parasympathetic fibres, are believed to release NO (nitric oxide) and/or vasoactive intestinal peptide in addition to acetylcholine. The nitric oxide especially relaxes the arteries of the penis, as well as relaxes the trabecular meshwork of smooth muscle fibres in the erectile tissue of the corpora cavernosa and corpus spongiosum. (Guyton & Hall. 2006) [24] Many medicinal herbs and drugs derived from herbs have been shown to have effects on the NO signaling pathway. For example, the saponins from ginseng (ginsenosides) have been shown to relax blood vessels (probably contributing to the anti-fatigue and blood pressure-lowering effects of ginseng) and corpus cavernosum (thus, for the treatment of men suffering from erectile dysfunction. (Francis I Achike & Chiu-Yin Kwan. 2003) [25]

Apart from this mechanism another set of neurotransmitters including norepinephrine, dopamine, serotonin, acetylcholine, and histamine are supposed to work together for increasing sexual arousal. Of these set of neurotransmitters involved in the neurochemical control of sexual behavior, serotonin plays an inhibitory role and dopamine an excitatory role. Dopamine plays a crucial role in the central control of sexual behavior in males. (Pfaus et al. 1990) [26]

On basis of this physiological description, it is clear that drugs which affect sexuality can either act on the central nervous system and/or on the peripheral nervous system or affect the physiological pathway directly. Drugs affecting the brain and presumably sex centres are generally attributed with an increase or decrease in sexual arousal. Drugs that affect peripheral nerves will not affect arousal directly but may affect sexual function. In some cases, drugs action is direct and involves chemical alteration

of the neurons, which governs sexual arousal or function. Alternatively, some drugs may act indirectly by altering blood flow to the genitalia. Most hypotheses concerning the neurochemical basis of sexual behavior are derived from studies in animals, but in some cases support has been provided by clinical studies.

DISCUSSION

Understanding the terminology used in Ayurveda texts and then putting the drugs mentioned as *Vrishya* and *Vajikarana* to laboratory and clinical experimentation has been analysed here. *Vajikarana* is a specialised treatment modality of Ayurveda and proposed benefits are manifold including increased sexual capacity, improving health of future progeny as well as in treatment of many common sexual disorders like infertility, erectile dysfunction and premature ejaculation. *Vajikarana* drugs also act as *rasayan* and have the capability to revitalize all the body elements and restores equilibrium and health. It is a special category of *rasayan*, which improves the reproductive system and enhance sexual function. The ancient scholars had classified the drugs on the basis of their actions observed in the human body which strikes a very appropriate correlation in view of laboratory assessment of seminal parameters and enhancement of sexual pleasure. *Sukrajanaka* drugs may initiate or enhance either spermatogenesis or androgen synthesis or both; whereas *Sukrapravartaka* drugs either improve ejaculation or improve the action of androgens; *Sukrajanaka Pravartaka* drugs may perform all the above said functions.

Moving a step further, in the light of evidence based scientific explanations, various studies have been made but most of them lack impeccable scientific evidence. It has been postulated that these drugs act on higher centres of the brain, i.e., the hypothalamus and limbic system (Chauhan et al., 2010). [27] The changes in germinal epithelium, enhancement of sexual pleasure and psychological improvement are also important markers to assess the effect of *Vrishya* and *Vajikarana* therapy. *Vajikarana* also claims to have antistress, adaptogenic actions, which helps to alleviate anxiety associated with sexual desire and performance. Chauhan et al., 2010 [28] in a study showed that administration of *Vajikarana rasayana* viz. *C. orchoides*, *A. longifolia* and *M. pruriens* ethanolic extracts modulate the level of the pituitary hormones

FSH and LH. This in parts can explain the positive effect of the herbs on sexual functioning. In another experimental study on *Asparagus racemosus*, *Chlorophytum borivillianum*, and *Curculigo orchioides*, the results provided evidence that the aqueous extracts are not only effective in overall sexual performance but may also be effective in erectile dysfunction. The results therefore substantiated the claims of Ayurveda medicine that these plants have aphrodisiac activity and may be helpful in improving the sexual behavior and performance. (Thakur *et al*, 2009) [29] Similar study involving an organometallic drug, *Vanga Bhasma* was analysed for its effect as *Vrishya* and significant improvement in seminal parameters, subjective symptoms, quality of life, psychological and social well-being was observed (Chaudhary *et al*, 2014). [30] Studies on certain other plants have also been conducted which suffice the claims made in Ayurveda texts regarding their aphrodisiac activity as discussed below.

Tribulus terrestris - Oral pre-treatment with methanolic extract of *Tribulus terrestris* significantly increased weight of testes and seminal vesicles; serum testosterone, FSH and LH levels and sperm motility, count and viability in sodium valproate (SVP) intoxicated rats. It also enhanced the activity of testicular anti-oxidant enzymes and partially alleviated degenerative changes induced by SVP in testes. (Shalaby MA & Hammouda AA. 2014) [31]

In yet another study, a dose-dependent improvement in sexual behavior was observed with the LAET treatment as characterized by an increase in mount frequency, intromission frequency, and penile erection index, as well as a decrease in mount latency, intromission latency, and ejaculatory latency. The enhancement of sexual behavior was more prominent on chronic administration of LAET. Chronic administration of LAET produced a significant increase in serum testosterone levels with no significant effect on the sperm count. No overt body system dysfunctions were observed in 28-day oral toxicity study. (Singh S, Nair V, Gupta YK. 2012) [32]

Withania somnifera:- It is one of the most widely exploited drugs of Ayurveda for use as rejuvenator and aphrodisiac. A study was conducted to evaluate the spermatogenic activity of full spectrum root extract of *Ashwagandha* in oligospermic patients. There was a 167% increase

in sperm count and 53% increase in semen volume and 57% increase in sperm motility on day 90 from baseline. The improvement in these parameters was minimal in the placebo-treated group. Furthermore, a significantly greater improvement and regulation were observed in serum hormone levels with the *Ashwagandha* treatment as compared to the placebo. (Vijay R. Ambiye *et al*. 2013) [33]. *Withania somnifera* possesses phyto remedial effect. It is one of the best antidotes against arsenic-induced reproductive toxicity. A study was conducted to observe the ameliorative effect of *Withania somnifera* on arsenic-induced testicular toxicity by exploring the crucial parameters such as sperm counts, sperm motility, hormonal assay and lipid peroxidation including histopathology. The study revealed that after administration of sodium arsenite, there was a decrease in the sperm counts and sperm motility accompanied by an increased incidence of sperm abnormalities and hormonal imbalance leading to infertility. However, after the administration of *Withania somnifera*, there was significant reversal in the parameters denoting that it not only possesses antioxidant and rejuvenating property but also maintains the cellular integrity of testicular cells leading to normal functioning of it. (Arun Kumar *et al*. 2015) [34]

Musli:- Two types of varieties viz. *Curculigo orchioides*, also known as *Kali Musli*, and *Chlorophytum borivillianum*, popularly known as *Safed Musli* is considered as aphrodisiac and *Rasayan* or rejuvenator. The rhizomes of *Curculigo orchioides* have been traditionally used as aphrodisiac. In a study administration of 100 mg/kg ethanolic extract of rhizomes was evaluated for its effect on sexual behavior in rats. There was significant improvement in the sexual behavior as assessed by determining parameters such as penile erection, mating performance, mount frequency and mount latency. There was also a pronounced anabolic and spermatogenic effect observed by increase in weight of reproductive organs. The treatment also markedly affected sexual behavior of animals as reflected in reduction of mount latency, an increase in mount frequency and enhanced attractability towards female. Penile erection index was also incremented in treated group. (Chauhan, Rao, Dixit. 2007) [35]

The lyophilized aqueous extracts of *Chlorophytum borivillianum* in dose of 100mg/kg body weight showed significant effect on the sperm count, seminal fructose content and penile erection

index. Similarly, the extract could also preserve the *in vitro* sperm count when compared to control group after 30 min. of incubation. The results show that the herb could significantly improve the pendiculatory activity in male rats after 14 days of treatment. (M. Thakur and V. K. Dixit, 2007) (M. Thakur *et al.*, 2011) [36,37]

Myristica fragrans:- *Myristica fragrans* of the family Myristicaceae also known as *jatiphala* is also a widely acclaimed medicine to be of value in the management of male sexual disorders. Oral administration of 50% ethanolic extract at the dose of 500 mg/kg, produced significant augmentation of sexual activity in male rats. It significantly increased the mounting frequency, intromission frequency, intromission latency and caused significant reduction in the mounting latency and post ejaculatory interval. It also significantly increased mounting frequency with penile anaesthetisation as well as erections, quick flips, long flips and the aggregate of penile reflexes with penile stimulation. The extract was also observed to be devoid of any adverse effects and acute toxicity. (Tajuddin, *et al.*, 2005). [38]

Phoenix dactylifera:- *Phoenix dactylifera* known as *kharjur* or date palm and is used in the traditional medicine for male infertility. In an experimental study it was observed that the consumption of its suspensions improved the sperm count, motility, morphology, and DNA quality with a concomitant increase in the weights of testis and epididymis. The date palm contains estradiol and flavonoid components that have positive effects on the sperm quality. The comparative evaluation between control and experimental groups revealed that consumption of date palm pollen suspensions improved the sperm count, motility, morphology, and DNA quality with a concomitant increase in the weights of testis and epididymis. It did not significantly affect the weight of the prostate and the seminal vesicle or the histology of the reproductive tissues. From the study, it was concluded that this seems to cure male infertility by improving the quality of sperm parameters. (Bahmanpour S *et al.*, 2006) [39]

Argyria nervosa:- The root, flower and to some extent leaf of the plant showed aphrodisiac activity as evidenced by an increase in mounting behavior of mice. The plant is valuable in development of effective medicine for stimulating male sexual activity. When different extracts of

the root were tested, the activity was found in the alcohol extract (200 mg/kg; p.o, single dose). The extract, 1 hr after administration, stimulated mounting behavior of male mice in a concentration-dependent manner. The root- or flower-treated male mice also exhibited a remarkable increase in mating performance. It also promotes fertility as increased sperm count, sperm motility, follicle-stimulating hormone release and synthesis. (Subramoniam A *et al.*, 2007) [40]

Pueraria tuberosa:- An experimental study to investigate the effects of ethanolic extract of *Pueraria tuberosa* (PT) on sexual behaviour and androgenic activity was done. Sexual behavior of male rats in the presence of a female rat was recorded and the treated groups were evaluated for sexual parameters. A dose-dependent increase in sexual behaviors was evidenced in the animals of extract treated groups. Increase in testis weight was recorded in PT. At the highest dose PT also affects the hormones level. The four compounds namely puerarin, daidzein, biochanin-A and formononetin were identified in ethanolic extract using LC-MS. It concluded that PT extract possesses androgenic effect and it significantly increased the sexual behaviour and hormones level. (Chauhan NS *et al* 2013) [41]

Mucuna pruriens:- In the present study, sexual behaviour tests showed that the ethanolic seed extract of *Mucuna pruriens* (*kapikachhu*) possesses significant sexual function enhancing activity. Mating behaviour test revealed that the test drug at a dose of 200 mg/kg significantly increased the Mounting frequency, intromission frequency and ejaculation latency in all the experimental days when compared to control. The test drug (200 mg/kg) not only significantly increased the ejaculation latency but also significantly reduced the mounting latency and intromission latency compared to control, which indicates the aphrodisiac nature of *Mucuna pruriens*. (Suresh S *et al* 2009.) [42]

Treatment with *M. pruriens* significantly improved serum testosterone, LH, dopamine, adrenaline, and noradrenaline levels in infertile men and reduced levels of FSH and prolactin levels. Sperm count and motility were significantly recovered in infertile men after treatment. (Shukla KK, *et al* 2009) [43]

Asparagus racemosus:- The hydro-alcoholic extract of *Asparagus racemosus* (*Satavari*) root at

concentration of 400 mg/kg body weight showed significant aphrodisiac activity on male wistar albino rats as evidenced by an increase in number of mounts and mating performance. In the same study, hydro-alcoholic extract at lower dose (200 mg/kg. body weight) and aqueous extract (400 mg/kg body weight) showed moderate aphrodisiac property. (Wani JA, et al 2011) [44] The behavioral analysis of rats was undertaken to observe the effect on mount, ejaculation and intromission latencies as well as frequencies, hesitation time and copulatory rate. It was observed that streptozotocin as well as alloxan induced hyperglycemic rats showed an overall reduced sexual performance. The deleterious effect was significantly ameliorated in animals treated with polysaccharide-rich fraction of *A. racemosus* thus validating the traditional claim of using *A. racemosus* as an aphrodisiac herb for treating sexual dysfunction in males. (Thakur, et al 2009) [45]

Asteracantha longifolia:- The ethanolic extract of *Asteracantha longifolia* (Kokilaksha) exhibited pronounced anabolic effects in treated animals, as evidenced by gains in the body and reproductive organ weights. Increased spermatogenesis due to treatment with extract was also witnessed in transverse section. The treatment further markedly affected sexual behaviour of the animals, as reflected by the reduction of mounting latency, increase in mounting frequency and enhanced attractability towards females. A significant increase in the sperm count as well as fructose levels of seminal vesicles was noted. (Chauhan et al 2011) [46]

Cocculus hirsutus:- Alcohol extract of *Cocculus hirsutus* (*chhilhint*) in dose of 25mg/body weight showed highly stimulant spermatogenic effects in mature male albino rats. Males treated with the extract displayed more frequent and vigorous anogenital sniffing and mounting as compared to untreated animals. The increased spermatogenesis in extract treated groups was confirmed by change in histo-architecture as evidenced by increase in number of spermatogonia, spermatocyte, spermatids and caudal spermatozoa. After subjecting to preliminary phytochemical screening, the alcohol extract showed positive tests for steroids, saponins, oils and fats, phenolic compounds and tannins. (Patil et al 2014) [47]

Inference can be drawn that this therapy aims to improve the function of the reproductive organs and vitalizes reproductive tissues increasing semen

count and strengthening sperm motility in men and making eggs more viable for conception in women. After thorough understanding of the concept of *Vrishya* and *Vajikarana*, the specific drugs being used for this aphrodisiac treatment need to be analyzed further on the basis of seminal parameters, quality of sexual life and the pharmacodynamic and kinetic study.

CONCLUSION

Vajikarana Chikitsa enhances the production of healthy sperm which leads to produce healthy progeny as the corner stones of a healthy future society. In classics, both *Vrishya* and *Vajikarana* are mentioned as synonyms to each other. *Vajikarana* is the therapy while *Vrishya* is the property (*Karma*) of the drug. Various drugs have been advocated for treating conditions of infertility, other reproductive disorders and for improving sexual desire as well as sexual performance. Effect on pituitary-gonadal axis, vasodilatation and raised testosterone level are suggested mechanism for its action of these drugs. All the *Vrishya* drugs are required to be properly screened for their exact site, nature and mode of action, so that selective administration of drugs for specific disorders can be made possible. Many limitations, like lack of scientific studies, possibilities of adulteration in the herbal and herbo-mineral combinations available in market and possibilities of unexpected side-effects, need to be considered before considering the mainstream use of this therapy. Investigations in validation of the herbal and herbo mineral drugs will go a long way in management of infertility.

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