

CONCEPTUAL ANALYSIS OF SEX DETERMINATION OR LING NIRDHARANA IN AYURVEDA

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ABSTRACT

All parents have a dream of be getting the healthy, intellectual and beautiful progeny this is also evident from the reference of the word like “*Suputrakameeya*” in classics. Ayurveda describes simple methods to produce a healthy offspring and the planning of which starts from the selection of partners. Many factors mentioned in Ayurveda towards the study of development of foetus including fertilization and sex determination, Ayurveda considered two basic factors in the development of human beings i.e., *Shukra* and *Shonita* it represents the sperm and ovum in modern medical science and which are responsible for the fertilization. Nearly all Acharyas like *Charaka* and *Sushruta* have recognised the three different types of sexes viz. *Puman* (male), *Stri* (female) and *Napunsaka* (hermaphrodite). In these contexts, *Charaka* clearly stated that dominance of *Shonita* during conception resulting procreation of female child and dominance of *Shukra* (sperm) leads to male child. The sex of an individual is determined by the X and Y chromosome. But sex determination mainly depends on the Y chromosome. It has been seen the individuals with a Y chromosome develop male characteristics and individuals without a Y chromosome develop female characteristics.

Keywords: *Shukra, Shonita, Puman, Stri*

INTRODUCTION

The sages of ancient India gave the vision of many scientific facts about human body such discoveries are the fundamental aspects for the basis of other sciences in present scenario. Many factors mentioned in Ayurveda towards the study of development of foetus and genetics including fertilization and sex determination, Ayurveda considered two basic factors in the development of human beings i.e. *Shukra* and *Shonita* it represents that of sperm and ovum in modern medical science and which are responsible for the fertilization. In these contexts, *Charaka* clearly stated that dominance of *Shonita* during conception resulting procreation of female child and dominance of *Shukra* (sperm) leads to male child. The sex of an individual is determined by the X and Y chromosome. Chromosomal sex determination refers to the presence of two identical (XX) or two different (XY) chromosomes in females and males, respectively. This is due to the distinct content of the X and Y-chromosomes in both genes and regulatory sequences, SRY (sex determining region Y) being the key regulator Hormones (Anti Mullerian Hormone (AMH), testosterone secreted by the foetal testis (gonadal sexual dimorphism), impede Müller duct development, masculinize Wolff duct derivatives and are involved in testicular descent (hormonal sexual dimorphism). Furthermore, sex chromosome genes directly affect brain sexual dimorphism, and this may precede gonadal differentiation. As one must have knowledge of fundamental basics for which this study is undertaken.

Ayurvedic Review: Here four concepts of sex determination have been taken to describe as:

1st Concept: According to Ayurveda *Garbha* lingam or sex is the contribution of *Shukra Dhatu* and *Artava*. It is the predominance of '*Shukra*' and '*Artava*' particularly at the time of '*Shukra Artava Samyoga*' (time of fertilization), which determines the sexuality according to Indian thoughts. Acharya *Charaka* and *Sushruta* both have recognised the three different types of sexes, viz., '*Puman*' (male), '*Stri*' (female) and '*Napunsaka*'. He has also mentioned the factors playing role behind these three states of sexes. In his view, it is the predominance of *Shukra* lead to the

formation of a male child, predominance of *Artava* leads to the formation of female child and their equality in strength leads to the formation of a *Napumsaka*. *Dalhana* has advanced the explanation of predominance of *shukra* and *artava*. He says that *artava* is four *anjali* and *shukra* one *prasrati* in quantity or *artava* will always be more in quantity than *Shukra*, but it is not so, here the quantity of pure *Artava* situated in uterus responsible for fertilization should be considered. However, occasionally due to over excitement etc. the quantity of ejaculated *shukra* (semen) may be more, or due to physiological depression it may be less which influences relative amount of *shukra* and *artava*. Citing the opinions of others, he has mentioned that instead of amounting the functional potency of *shukra* and *artava* influences the formation of sex.

Sharngdhara says that besides role of *Shukra* and *Artava*, the will of God is responsible for formation of sex.

2nd Concept: *Yogaratnakara* besides giving the importance of predominance of *Shukra* and *Artava*, has mentioned that from *Dakshina-nadi* the male child is born and from the left female child.

3rd Concept: *Bhavamishra*, gives a new view regarding birth of a male and female child and has recognised the way of insemination and the role of three distinct '*Nadees*' is giving rise the male and female offspring. In his view, there are '*Sameerana*', '*Chandramasi*' and '*Gauri*' three distinct '*Nadees*' in a genital organ of a woman. The discharge of '*Virya*' (semen) gets waste, if happens to fall in the mouth of the *Sameerana*; if it happens to fall in the mouth of *Chandramasi*, a second prominent *Nadi*, the woman gets satisfied with little duration of orgasm and gives birth to a female child; if it happens to fall in the mouth of *Gauri Nadi*, a prominent one characterised to give birth to male.

4th Concept: When the coitus done on even days the born child would be male and with odd days it would be a female. On *Chaturthi*, *Astami*, *Dashami* and *Dwadashi* it would be male and on *Panchami*, *Saptami*, *Navami* and *Ekadashi* it would be a female. *Trayodashi* etc. are contraindicated dates for coitus. According to

Vagbhata a person desirous of having an offspring of high qualities should have not coitus for three days in *ritukala* (up to 7th day of menstruation). The child conceived on *ekadashi* and *trayodashi* would be *napunsaka* (hermaphrodite). The cause of birth of male or female on even or odd days respectively that on even days *artava* is less which increase on odd days.

Modern Review:

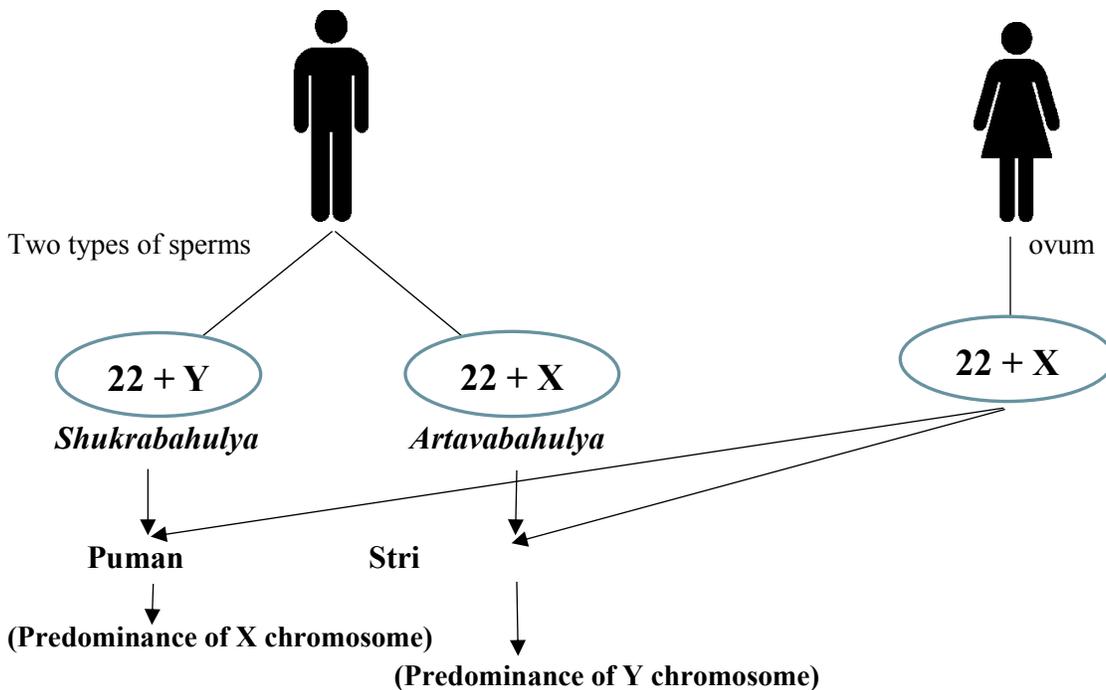
System of Sex Chromosomes

A sex determination system is a biological system that determines the development of sexual characteristics in an organism. When the presence of a chromosome that was involved in the determination of sex was noted, it was called the X chromosome. To differentiate it from the other chromosomes (which were not involved in the process of sex determination), it was also named the allosome (sex chromosome). Another chromosome, structurally different from the X, but also involved in sex determination process was subsequently detected. It has been named the ‘Y’ chromosome. In mammals,

including humans, a normal female has two X chromosomes and a normal male has one X and one Y chromosome. The gametes of a female will have only the X chromosome. Therefore, females belong to the homozygotic sex. The gametes of the male will be in two groups: one group with the X chromosome and the other with the Y chromosome. Males belong to the heterozygotic sex.

Correlation of First Concept

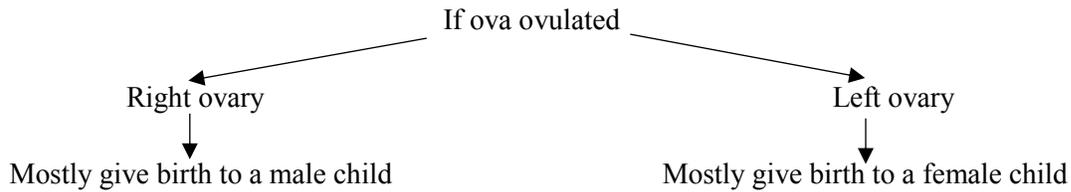
- Shettles studied sperm cells to observe their differences. He theorized based on his observations is that Y-carrying sperm are lighter, smaller and have round heads.
- He also studied sperm in some rare cases where man had fathered either mostly male or mostly female children. In the cases where the man had mostly male kids, Shettles discovered that the man had far more Y- carrying sperm than X- carrying sperm.



Correlation of Second Concept

The X and Y chromosomes in males act as homologous chromosomes during meiosis and pass into different gametes. Thus, males produce two types of gametes and are described as heterogametic i.e. (22+X) and (22+ Y) while the female which produces only one type of gamete is homogametic.

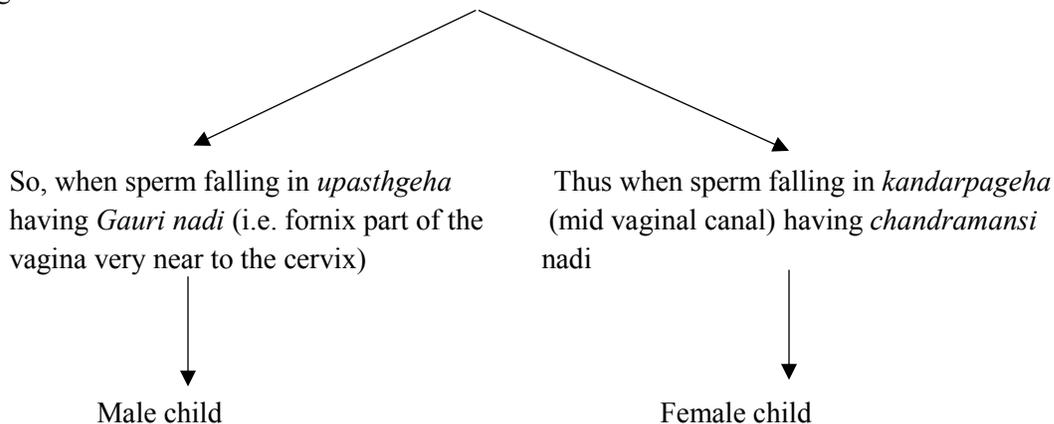
Otto schooner's theory: It is examined in research when right ovary ovulated ova will fertilize produces a male child as well as when left ovary ovulated ova will fertilize produces a female child. So left ovary ovulated ova more potent than right one.



This method can be used after first pregnancy.

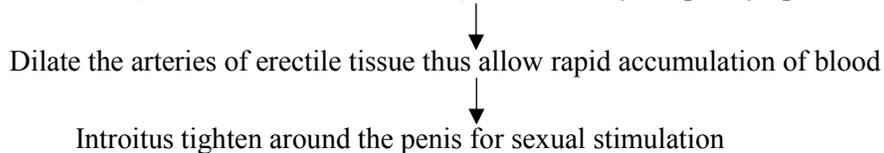
Correlation of Third Concept

- This method also correlated with Shettles method that male sperm tend to swim more quickly in alkaline environment like in the cervix and uterus and female sperm tend to survive longer in acidic conditions of the vaginal canal.



The discharge of 'Virya' (semen) gets waste, if happens to fall in the mouth of the Sameerana (introitus part of vagina).

- Here nadi can be correlated with the nerves also. This concept considered with sexual physiology as follows:
 - Erectile tissue (from introitus to the clitoris) controlled by the parasympathetic nerves of sacral plexus



- Parasympathetic signals also pass to the bilateral Bartholin's glands secretes mucus immediately inside the introitus responsible for lubrication during sexual intercourse, although mucus also secreted from the vagina

- c) During the orgasm the peripheral muscles of the female contract rhythmically, which results in increase uterine and fallopian tube motility

↓
Helping to transport the sperm upward through the uterus towards the ovum

↓
Which ultimately helps in conception

- Female orgasm seems to cause dilation of cervical canal for up to 30 minutes thus allowing easy transportation of sperms.

Correlation of Fourth Concept (Scope for Further Study)

Acharya *Sushruta* advises for expectant parents to indulge in sex during even days after the cessation of menstrual flow/days nearer to ovulation to get a male baby and odd days for those who are in expectation of female. According to Acharya *Dalhana* on even days there is less predominance of *Rajah* (X chromosome/*Rajotpadakbeejabhaga*) and on odd days *rajah* is predominant. Hence, we obtain male baby on engaging in sex during even days of menstruation and female baby on odd days. One can conduct research work why and how *Rajah* varies in terms of predominance during these days.

DISCUSSION

The knowledge which our ancient seers is scientific and forms the basis of other sciences. We can find detailed description of *Garbha Sharir* in our classics. *Garbha Sharir* which deals with the developmental events that takes place during the Intra uterine life, which is nothing but Embryology of Modern Science. *Garbha* is defined as the union of *Shukra* and *Shonita* along with *Atma*. Modern science also explains that union of ovum and sperm (fertilisation) is the basic event necessary for it to be called an embryo later after consequent stages the resultant fertilised product is called foetus. Here *Shukra* and *Shonita* can be taken as sperm and ovum respectively. In our classics it is described that predominance of *Shukra* in the fertilized product gives birth to a male child, predominance of *Shonita* results in birth of a female child and predominance of both results in *Napunsaka*. As said in the earlier part of discussion that *Shukra* and *Shonita* are sperm and ovum

respectively. Sperm contains XY chromosome and ovum contains XX chromosome. In the 1960s in the United States Landrum B. Shettles developed the Shettles method, which is a procedure for couples to use prior to and during an intercourse to increase their chances of conceiving a foetus of their desired sex. Shettles investigated whether he could differentiate X-carrying sperm and Y-carrying sperm by their physical appearance. In the late 1960s Shettles examined over 500sperm specimens using a phase contrast microscope and concluded that the small, round-headed sperm contained male-producing Y chromosomes, or androsperm, while the large, oval-shaped sperm contained the female-producing X chromosomes, or gymnosperm. During his research, Shettles also noticed that most samples did not contain an equal number of both types of sperm. To analyse the potential effect that difference had on the actual sex outcome of a child, Shettles began checking the family history of the men who provided the sperm specimen. Although rare, he did find some instances of men whose semen contained significantly more round-headed androsperm in those cases, the men had a male-dominant family history Similarly, yet still rare, Shettles also found that men whose semen contained significantly more oval-shaped gymnosperm had produced more female children. So *shukrabahulya* can be correlated with Y-carrying sperms and *artavabahulya* with X-carrying sperms. Shettles method also defines that male sperm tend to swim more quickly in alkaline environment like in the cervix and uterus and female sperm tend to survive longer in acidic conditions of the vaginal canal thus by this experimental theory we can justify the above third concept of three *nadis* in vaginal canal.

CONCLUSION

Ayurveda a traditional life science, explains about the concept of sex determination in different ways which has similarities with the contemporary science. This shows that how well the embryological concepts were known to our Acharyas. But due to more advancement in medical technologies very detailed descriptions are seen in the modern science. We can predict that our Acharyas also had done repeated researches on these topics only then they were able to establish the concepts, they might even had done research on these concepts at higher level but we do not have such collections in our classics. By analysing the Review of the concerned topic, it is concluded that there are similarities between both the sciences about the concept of Sex determination. *Shukra* is considered as sperm having Y chromosome and *Shonita* is considered as sperm as having X chromosome and also with ovum having X chromosome.

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