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Genetics of Ayurveda in Infertility

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ABSTRACT

Introduction: Infertility is the clinical entity where couple fail to conceive even after one year of regular unprotected sexual activity. Many factors are responsible for infertility like ovulation defects, spermatogenic failure, parental age, obesity, anatomical defects, infections, also with specific karyotype and genotype. **Materials and Methods:** Data was collected from Classical references and modern textual references to show how Ayurveda explains beautifully about the infertility, genetic cause for it. **Results:** Effort are made to explain genetic theory according to Ayurveda in the context of Infertility **Discussion:** To have a healthy individual constitution impact of certain factors are very essential, which includes healthy reproductive organs of both male and female, healthy sperm and ovum, dietic regimen, *Prakruti* of couple, seasonal effect, *Panchamahabhoota* and *Shadbhavas*. Impact of *Doshas* on these will have vital role in formation of genetic code and reproductive capacity of individual. Hence all the above factors may be said as factors responsible for genetic modification influencing the fertility in Ayurveda. This knowledge is highly essential and need of the day for welfare of better society with good progeny through means of Ayurveda.

Key words: *Vandyatwa, Infertility, Genetics, Garbhashaya, Ahara-Vihara Prakriti.*

INTRODUCTION

Garbha (embryo) is formed by the union of *Shukra* (male gamet) and *Shonita* (female gamet) in *Prakruta Garbhashaya* (healthy reproductive organs),^[1] under the influence of normal *Garbha Sambava Saamaghri* (embryonic growth factors),^[2] *Shad Bhavas* (six influencing factors),^[3] *Kaala* (time factor),^[4] *Panchamahabhoota* (five fundamental elements),^[5] and *Ahara Vihara* (dietic lifestyle) of parents.^[6] Genetics of the embryo is based on the *Prakriti* (constitution)

formed by predominance of *Dosha's* prevailing at the time of *Shukra Shonita Samyoga* (union of male and female gametes) with *Shadbhavas* (*Shukra, Shonita, Kala, Garbhashaya* and *Panchamahabhoota*) (Six influencing factors)

“*Shukra Shonita Samyoge Yo Bhaved Dosha Utkataha Sa Prakruti Uchyate*”.^[7] That is during the formation of a zygote, which *Dosha* is predominantly present in the composition of zygote, accordingly individual *Prakriti* (constitution) is formed. These reflections of *Dosha* variations are imbedded in the genes of zygote and carried as of hereditary feature. Further, influence of *Doshas* in *Kaala* (*Dina* and *Ritu Kala*) (time and seasonal factors), *Matru Ahara Vihara Sevana* (mother dietic lifestyle) and environment of *Garbhashaya* (healthy reproductive organs) will also have the impact in final formation of the *Prakruti* (constitution). Which are reflected as unique features of a grown individual i.e. personality, called as *Prakriti* (constitution) of that individual.

Thus, individual *Prakruti* (constitution) of a person is based on variations in dominance and recession of

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Doshas in *Garbha Samagri (Sampada)* (embryonic growth factors), which are anatomically carried over by genes in the off spring.

Role of *Garbha Sambhava Samagri (embryonic growth factors)* in Genetic Infertility

The four essential factors for healthy conception are called as *Garbha Sambava Saamaghri* (embryonic growth factors) viz. *Rutu, Kshetra, Ambu* and *Bija*. Any defects in these definitely will have the bad impact on fertility, which can be explained in terms of genetic infertility.

Rutu in this context can be explained in two aspects one as *Ritukala* (abnormality of menstrual period) like abnormal conditions of menstrual cycle and another is *Ritu Srava* like irregular menstruation either it may be menorrhagia, metrorrhagia, oligomenorrhoea, hypomenorrhoea, which are of due to hormonal imbalances under the influence of *Doshas*. Under *Ritu Kala* the right time or delay of ovulation is also to be considered as it is the prime factor in fertility. All these factors appear to be abnormalities of ovaries may be of their dysfunction or structural abnormalities.

Kshetra means fallopian tubes and *Garbhashaya* which forms path of *Beeja* collection, transmission and site of establishment for zygote respectively. So, the structural abnormalities like any congenital defects of uterus i.e. infantile uterus, pin whole os, retroverted uterus etc. and tubal blocks and absence of fimbria are of fallopian tube abnormalities. And functional abnormalities of *Kshetra* are like unresponsive fallopian tubes and endometrium, mullerian agenesis, androgen insensitivity syndrome, androgenital syndrome, endometriosis etc. hence healthy *Kshetra* means healthy fallopian tubes and uterus in structural and functional aspects.

Ambu factor in this context is nutritional aspect of *Garbha* (embryo/pregnancy), normal and abnormal conditions in the formation and function of placenta, which looks after the nutritional / anabolic hormones to be considered under *Ambu*. If the same has been affected by vitiated *Doshas* will be carried over from

mother to the next off spring either in the form of congenital or hereditary aspects.

In case of *Bija, Stree Bija* (ovum) and *Pumbeeja* (sperm) is to be considered. In *Ayurveda*, it is obviously explained that which part of the *Bija* is affected, the same is carried to the offspring as *Beeja Dosh*.^[8] (defective sperm and ovum). Non-formation or malformation of ovum in female and azoospermia, oligospermia, spermasthesia etc. in male will be considered under *Beeja Dosh* which cause *Vandyatwa*.

Beejabhaga Avayava Dosh^[9] (defective DNA of sperm and ovum) will also cause *Shandi* and *Vartika* (male with feminine character and female with masculine character) etc. X or Y chromosome defects in both sexes.

Influence of *Shadbhava (essential six factors)* in Genetic Infertility

In *Garbha Utpatti* (origin and development of embryo) all the *Shadbhava* i.e. *Matruja* (fetal parts derived from mother), *Pitruja* (fetal parts derived from father), *Atmaja* (factors of soul), *Satmyaja* (congenial factors), *Rasaja* (nutrient and hormonal factors) and *Satvajabhava* (psychosomatic factors) play vital role, whose affects also reflects in genetical impacts.

Any abnormality or deviations in *Matrupitruja Apachara* like *Aharaja* (improper Dietary Habits) and *Viharaj* (unhealthy daily activities and occupations), *Satmyajabhava Apachara* (unhealthy habits and addictions), *Rasajabhava Apachara* (improper Nutrition) effects in all aspects of offspring with defects like in *Prana* or *Bala Anubandha* (attachment of life or strength with body), *Trupti* (contentment), *Pushti* (nourishment), *Utsaha* (enthusiasm or zeal), *Garbha Sampada* of the progeny (ovum/sperm and fertility) etc. *Satvajabhava Apachara* (due to emotional and stress factors) like *Dwesh* (hatred), *Matsarya* (jealousy), *Bhaya* (fear), *tandra* (lethargy) etc. along with *Purvajanmakruta Karma* (previous negative deeds) and *Daiva* leads to challenges to affect the progeny.^[10]

Tridosha Impact on Genetic Infertility

Individual constitution is varying from person to person due to specificity of genetic code. The constitutional factors explained in *Ayurveda* are based on *Vata*, *Pitta* and *Kapha Dosha* (three humors). It mainly depends on dominant and recessive of *Dosha*. Dominant *Dosha* is responsible for the particular type of *Prakruti*. The dominant *Dosha* interference begins just from the time of fertilization i.e. during union of *Shukra* with *Shonita*, until final formation of zygote, that becomes *Shukrashonitaja Prakruti* (individual or personal constitution) of the progeny, the expressions are called as *Doshaja Prakruti* (individual or personal constitution).

As per *Ayurveda* science the genetics of person is explained in terms of predominance of *Dosha* like *Vata*, *Pitta*, *Kapha* as *Prakriti* and formation of *Saptadhatu* (primordial tissues) with the help of *Panchamahabhuta* (five elemental factors) as *Saara* which are innate factors.^[11]

To understand the *Dosha* at the minute level, and cause for the infertility, can be known by having knowledge of *Doshic* subtype functions.

Types of <i>Dosha</i>	<i>Sthana</i> (Location)	Areas of functions	Abnormalities noted on their deviation.
<i>Pranavayu</i> , <i>Tarpaka Kapha</i>	<i>Murdha</i>	<i>Uras</i> and <i>Kantha</i> ^[12]	Vitiation of these may cause the defective pulsation of H-P-O axis and GnRH abnormal function in turn leads infertility.
<i>Udanavayu</i>	<i>Urapradesha</i>	<i>Nasa</i> , <i>Nabhi</i> , <i>Gala</i> ^[13]	The cells of the GnRH are released from the nose, which

			regulate the H-P-O axis. Abnormality in this process will cause infertility.
<i>Vyanavayu</i> , <i>Sadhaka pitta</i> ^[14] and <i>Avalambakakap ha</i> ^[15]	<i>Hrudaya</i>	<i>Sarvadeha</i> ^[16]	<i>Soumansyan am Garbha Dharanana</i> . If any deviations in this will be the basis for infertility.
<i>Samanavayu</i> <i>Pachaka Pitta</i>	<i>Grahini</i> nearer to <i>Agni</i>	<i>Koshta</i> ^[17]	Their vitiations result in Improper digestion and metabolism which in turn will have effect on hormones and their functions
<i>Apanavayu</i>	<i>Apanostit a</i>	<i>Sroni</i> , <i>Basti</i> , <i>Medra</i> , <i>Uru</i> ^[18]	Deviation of <i>apana vayu</i> will cause congenital, chromosomal, and hormonal abnormalities, in turn leads infertility. Since it is the prime administrator of <i>Garbha Samagri</i> and <i>Garbotpatti Sthana</i>

Ranjaka Pitta	Yakrut[19] and Amashaya	Circulatory system	Liver will release SHBG which bind the free testosterone if this is hampered then free testosterone level will increase, and insulin resistances will occur, which cause the infertility.
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Panchamahabhoota Impact in Genetic Infertility

Panchamahabhootas like Vaayu (air), Teja (fire), Aap (water), Pruthvi (Earth), Akasha (Atmosphere) has an very important role in the formation of Garbha since they are the primordial elements in formation of Shareera.. That is from the union of sperm and ovum to the cell division, organ formation, inturn formation of system and whole body formation (Anga Pratyanga formation). Hence any defects in these factors of Panchamahabhootas will lead to defects in Shukra and Shonita as well in Garbha Samagri, which are carried to the offspring.

“Vaayu Vibhajayati Tejam En Pachati Aap Kledayati Prutvi Samhanti Akasha Vivardayati”^[20] Predominant of Panchamahabhoota Sanghatana along with six Garbhoutpadakara Bhavas will decide the Prakruti and formation of an individual body.

Clinical Importance of Ayurvedic Genetics in Infertility

The predominant cause for infertility is vitiation of Dosh at various levels in the union of sperm and ovum, which are carried to the embryo during fertilization, apart from defects in the embryo, the reproductive parts of the progeny may also effect leading to infertility on attaining their reproductive age, which are known genetic defects. Thus, healthy

Beeja, Beejabhaga and Beejabhagavayava play key role in fertility or in infertility.

For Diagnosis and Prognosis of infertility, having knowledge of Prakruti is very important and essential. As both the forms of Prakruti, Garbhaja and Jataja gives clues of hereditary and congenital factors leading or involved in a case of infertility either of a male or a female. By which we can easily diagnose and assess the prognosis of the case, if family history of infertility in either of the couple will positively effect on fertility rate as we see in consanguinity marriages, may be in the form of miscarriages and congenital anomalies. Thus, the knowledge of genetics is simply known by assessing the Prakriti, Saara and by Dashavidha Pariksha etc. without much paraphernalia. Now a days, as high financial involvement is in infertility treatment in modern medicine, but the same can be carried over by having knowledge of genetic defects and their encounter through Ayurveda in cheaper ways with least financial involvement. Which is highly essential and need of the day for welfare of better society with good progeny through means of Ayurveda.

CONCLUSION

Healthy fertilization, implantation, growth of the fetus up to 9 months and healthy progeny are depends upon many factors like Matruja Pitruja Ahara Vihara, Poorva Janmakruta Karma, Kaala, Pancha Mahabhoota, healthy reproductive organs and Shuddha Shukra and Shonita. Any defective deviation among one also leads to deformity in growth and development of fetus and have adverse effect on individual constitution. Now a day's faulty diet habits will have harmful impact on reproductive organs, sperm and ovum in growth and development. Vitiations in these leads to congenital anomalies or genetic defects. Later these acts as principle causative factors for the infertility. Similarly, Pancha Mahabhoota's, are primordial factors in the formation of Garbha; any vitiation in these will directly effect on the gene mutation. Future it acts major genetic cause for infertility in the fetus in its imminent life. Hence defects in Shadbhava's, Tridosha, Pancha

Mahabhoota, and *Garbha Sambhava Samgri* will direct effect on growth and development of fetus with adverse impact on genes which will lead to genetically infertile fetus.

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