A CRITICAL REVIEW OF GENETICS IN AYURVEDA

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INTRODUCTION

Human was always engaged with fundamental questioning on nature of hereditary long before the concept of genetics became a scientific study. Scientific study on genetics started since ancient time. Although our ancient literature does not implicated the pure and literally aspect of it in much detail but had an elementary knowledge of it in applied aspect of life rather than literarily in the field of Shrusti utpatti, Prakriti, inheritance of character and growth of foetus by maternal, paternal, rasaja, satmyaja, sattwaja and atmaja bhavas (Shadbhavas), genomics principles, constituent of Beeja responsible for inheritance, gene transformation, and genetic determined disease appear due to Beeja Dushti etc. In the present article, reviewing and elaborating the various concepts regarding genetics in literature of Ayurveda are mentioned. Still thorough, systematic and scientific approach is need of time for scientific justification of this branch of science in Ayurveda; Ayurveda is a guide in various streams of medical sciences.

KEYWORDS: Beeja, Beeja Dushti, genetics, Prakriti, Shadbhavas, Shrusti utpatti.

ABSTRACT

Ayurveda is a source of well documented knowledge regarding genetics. Ayurveda had an elementary knowledge of genetics in applied aspect of life rather than literarily in the field of Shrusti utpatti, Prakriti, inheritance of character and growth of foetus by maternal, paternal, rasaja, satmyaja, sattwaja and atmaja bhavas (Shadbhavas), genomics principles, constituent of Beeja responsible for inheritance, gene transformation, and genetic determined disease etc. In the present article, reviewing and elaborating the various concepts regarding genetics in literature of Ayurveda are mentioned. Still thorough, systematic and scientific approach is need of time for scientific justification of this branch of science in Ayurveda; Ayurveda is a guide in various streams of medical sciences.

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Shrusti Utpatti1

The various Indian and Ayurvedic philosophers have been provided their opinion regarding theory of evolution. In Ayurveda, evolution theory adopted and influenced by Sankhya Darshan. In this theory, foremost factor is Avyakta. It is the causative factor of all the creatures of universe. Mahan is derived from Avyakta, dimension of consciousness enveloping entire universe i.e. knowledge by which speciation could occur. Then Ahamkara developed from Mahat i.e. self-identity and biological mechanism which has enables billions of species to survive in universe. Ahamkara interact with three prime qualities like Sattwa, Raja and Tama and by several permutation and combination of these three primal qualities manifests infinite number of living and non-living substances chronologically by Panchtanmatra and Panchmahabhuta. DNA, the regulator and most important point of genetics is influenced and driven by intelligence to guard each and every growth and metabolism of body which in turn affect the living substance.

Anatomical consideration

The Beej2 is the basic substance which has minute hidden precursor of future progeny. Male part is Shukra (sperm) and female part is Shonita (ovum).3 It has different
component viz Beejdhaga, Beejdhagavayava and Beejdhagnamedaksh. If the part of Angavayotpadakabeesha (gene responsible for production of organ) gets vitiated then that part is affected with respective disease of parents. If not, then offspring will remain healthy and normal. Dominance of Shonita during conception resulting procreation of female child and dominance of Shukra leads to male child. Presence of Y chromosome leads to maleness regardless of number of X chromosome present, absence of Y chromosome results in female development.

**Prakriti:** A man is examined by tenfold examination factors for elaborating detail about human nature, constitution and behaviour. One of these factors is Prakriti. Prakriti is collectively the genotype and phenotype characteristics of individual. It is formed due to involvement of Dosa at the time of fertilization. It is of seven types Vattik, Paittik, Kaphaj, Vatapitta, Pittakapha, Kaphavana and Samdoshajya Prakriti. They remain constant throughout life. Prakriti has a genetic association that can provide knowledge for classifying human population based on phenotype characteristics. The concept of Prakriti in Ayurveda should be considered from genomic viewpoint. Permutation and combination of Vata Pitta Kapha attributes characters along with other factors like difference types of Purusha. Prakriti specific treatment including medicine, diet and lifestyle is a distinctive feature of Ayurveda. The concept of individualized medicine in perspective of Prakriti has been recognized in Ayurveda. Prakriti assessment evaluates each Doshas degree of dominance. It gives an important idea for diagnosis, prognosis and therapeutics. In Ayurveda, Prakriti constitute the bodily constitution, mental status and fundamental form specific for every individual. It is also determined by following factors: sperm and ovum (Shukrashonita prakriti), season and condition of uterus (Kal Garbhasaya prakriti), food and regimen of the mother (Matur aharvihar prakriti) and the nature of Mahabhuta comprising the foetus (Mahabhuta vicar prakriti). Personal genomic information carrying types of Prakriti identifying the health risks, drug response in order to personalize own medical care; take preventive measure to improve the health.

**Shadbhavas (six factors) of embryo**

Our ancient seers gave importance to six factors for proper development and growth of foetus. These are Matraja (maternal), Pitraja (paternal), Satwaja (psyche), Satmyaja (habitual), Rasaja (nutritional) and Atmaja (soul) Bhavas. Matraja bhava is the most important and essential factor for proper growth of foetus in intrauterine life. Foetus organs soft in nature arises from maternal component from ovum during conception. Organs are skin, spleen, kidney, bladder, rectum, stomach, intestines, upper and lower part of anus, mesentery and omentum. Pitraja bhava are production of hair, nail, teeth, bones, veins, ligaments, arteries and semen. Soul passes from generation to generation according to their good and bad conduct of actions since birth and death. It is responsible for the life span, self-realization, mind sense to take things in and to excrete out of the body, stimulation of sense organ, characteristic shape, voice and complexion of individual, desire of happiness and sorrow, liking and disliking, consciousness, courage, intellect, memory, egoism and efforts. Satmyaja bhava is responsible for health of foetus. It might include place, race, cast, habitat, season, disease, exercise, day time sleep, taste, constitution etc. Rasaja Bhava leads to growth of body, continuity of strength, satisfaction, plumpness and enthusiasm. For proper growth and development of foetus and mother, month wise diet has been recommended. Before conception, the couple is advice to take healthy diet. Ghee and boiled milk with sweet drugs for male because it is homologous with Shukra properties. Woman should take Tila Tail (Sesamum) and Masha (Phaseolus radiatus) because it increases Agneya properties of Artava. This improves the quality of sperm and
ovas. Maternal part is playing an important role to growth of foetus. It should be free from all toxic and hazardous substances because it may alter the gene expression during embryogenesis and cause nondisjunction during meiosis.

**Sattwa Bhavas** includes conduct, purity, enmity, memory, attachment, strong desire, valour, fear, anger, drowsiness, enthusiasm, sharpness, softness, seriousness, instability and other such manifestations of mind. In gestational period, foetus learns sounds respond differently to them after birth. It thinks with their senses. It responds with previous recovery from intrauterine life.

**Genetic transformation**

Ayurvedic philosopher knew the method which transforms genetic material from female chromosomes to male chromosomes. There is a process where quality and characters of foetus are improved by **Sanskaraar**. It is called as **Punsawan Sansakaar**\(^{10}\). The process in which embryo may be changed from male to female and from female to male vice versa by different process after conception like **Vatashung, Urda**, yellow mustard and curd are mixed and taken in **Pushyanakshatra** and flour of rice along with water should taken **Nasya** in right and left nasal opening for changing embryo in male and female respectively at suitable time and process. This is a major contribution in the field of genetics.

**Genetic Diseases**

Disease may be since from birth or from hereditary or outflow from family either maternal or paternal way. If there is vitiation of maternal **Beej bhaga** then it will lead to birth of sterile child. If **Beejbhagyava** are vitiated then it will lead to birth of **Putipraja** and if **Beejbhagnamedekesh** vitiates then it will lead to birth of **Varta child**\(^{11}\). Similarly paternal side produces **Bandhya, Putipraja** and **Trinaputric**\(^{12}\).

**Adibalapravritta** diseases are diseases which are congenital in origin and genetically determined are caused by the vitiation of **Beej** of mother and father like **Kushtha** and **Arsha**\(^{13}\). **Madhumeha** is homologous to diabetes mellitus and it is due to **Beejdosha**. Genetic predisposition involvement is much strong in DM\(^{14}\). **Jatunmani** and **Nyachha** are congenital diseases\(^{15}\). **Atisthaulyata** is due to vitiation of maternal and paternal **Beeja**\(^{16}\). The main cause of genetic disease is vitiation of **Matraja Beeja** and **Pittraja Beeja**. Vitiation of **Beeja** is caused by wrong diet and regimen of father and mother and sinful acts of past.

**Chromosomal Abnormality**\(^{17}\)

Sex chromosome abnormality is one of the strongest points regarding genetic susceptibility. **Charak** in his context described **Dwireta** which may be considered as true hermaphrodites. The other like **Pavanendriya** may consider as klinefelter syndrome having unexplained. **Narshanda** having normal male karyotype but external phenotype is essentially that of a normal female, it may consider male pseudohermaphroditism, **Narishanda** having karyotype is female but the external genitalia is virilised to that they resemble those of a normal male. Similarly, **Samskarvahii, Vakri, Irsyabhirati** and **Vatikshanda** also mentioned in **Ayurveda**.

The suitable age for father and mother and physical condition of mother at the time of conception have been given by the **Sushruta** which states that mother is of 16 and father is of 25 are favourable for the birth of a normal foetus\(^{18}\). Lady having more age and sick from long time illness should not allow to conceive. Recent researches showed that there is a strong relation between chromosomal abnormality and advancing maternal age.

It is necessary that male and female should be from different clan and race to avoid consanguineous marriage so that homogeneous recessive traits remain separated. Morbidity and mortality increases due to abnormal structural and numerical abnormalities in consanguineous marriage\(^{19}\).

**DISCUSSION**

All living substances have a tendency to pass its traits and characters to its progeny. All cells have two parts viz cytoplasm and nucleus. Whole part is divided into so-
matic part and germinal part. All genetic coding and genetic material are present in nucleus. Each chromosome is made up of DNA and further gene which is causative factor for inheritance of character from generation to generation. *Shukra Beeja* is sperm and *Shonita Beeja* is ovum. *Beeja bhagavayava* is the chromosome and *Shairirbeejbhagnamedkesh* is gene or allele. There is a correlation between *Prakriti* and gene related symptoms. Y Ghodke, K Joshi and Partwardhan et al. describe *Prakriti* on the basis of CYP2C19 gene polymorphisms on the basis of metabolic activity. Partwardhan et al. shows relation between *Prakriti* and HLA DRB1 allele frequencies.

**CONCLUSION**

Our ancient literature had an elementary knowledge of genetics in applied aspect of life rather than literally in the field of *Prakriti*, inheritance of character as *Shadbhas*, genomics principles, constituent of *Beeja*, gene transformation, genetic disease etc. Our literature had seeds of genetics which flourish in light of modern scientists. Still thorough, systematic and scientific approach is need of time for scientific justification of this branch of science.

**REFERENCES**

ume 1 Sharira Sthana chapter10 verse19.pg926.
20. Yogita Ghodke, Kalpana Joshi and B.Parwardhan. traditional medicine to modern pharmacogenomics: Ayurveda Prakriti type and CYP2C19 gene polymorphism associated with the metabolic variability in eCAM.

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