

## Ayurveda perspective of Genetics w.s.r. to *Bija*, *Bijabhaga* and *Bijabhagavayava*

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### REVIEW ARTICLE

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#### ABSTRACT

Ayurveda is science of medicine practicing in India from thousands of years; the literature of ayurveda encompasses description of genetics. *Sushruta* has classified hereditary and congenital types of diseases such as; *sthaulya*, *klaibya*, *prameha* and other diseases occurs due to the defect in genetic component. Ayurveda also emphasized that the variation in *prakriti* is also due to the variation in genetic component. Therefore as per ayurveda the terms hereditary play vital role towards the health and well-being of an individual. *Beeja* (chromosome), *beejabhaga* (genes) and *beejabhagavayava* (fraction of part of chromosome) are important terms described by ayurveda to explain defects in sperm and ovum. The *beeja*, *beejabhaga* and *beejabhagavayava* are considered responsible for hereditary diseases along with other factors. Present article describe ayurveda perspective of genetics with special description of *Beejabhaga* and *Beejabhagavayava*.

**Keywords:** Beejabhaga, Beejabhagavayava, Genetics, Hereditary.

#### INTRODUCTION

Ayurveda describe concepts of genetics as qualitative and quantitative predominance of *doshika* from birth which is responsible for the specific *prakriti* of an individual. The predominance of *doshika* depends upon characteristics of *shukra* and *shonita* which unite during the process of sexual intercourse resulting child birth. The hereditary diseases are caused by abnormalities in *shukra* and *shonita*. Concept of *beejabhaga* also mentioned in Ayurveda which involve diseases due to the defect in ovum such as; *yonivyapd*. The damage of ovum gene (*beejabhaga*) leads sterile progeny while damage in part of this gene (*beejabhagavayava*) causes *putipraja* (dead foetus). Maternal defects may lead *suchimukhi yonivyapat*. The diseases such as *kustha*, *arsha*, *prameha* and *yakshma* may also consider hereditary disorders which may occur due to the *shukra* and *shonita* defects.

#### Chromosomal Abnormality:

The rare chromosomal disorders are *samskarvahi*, *vakri*, *irsyabhirati* and *vatikshanda*. The other chromosomal disorders are as follows:

#### Dwireta

Individual possess both testicular and ovarian tissue.

#### *Pavanendriya*

Unexplained involuntary infertility and azoospermia.

#### *Narashanda*

Male psedohermaphroditism, *Narishanda* female karyotype but the external genitalia resemble those of a normal male.

**The factors which contribute towards the prevalence of genetic disorders are as follows:**

- Defect in *shukra* and *shonita*.
- *Bija*, *Bijabhaga* and *Bijabhagavayava*
- *Kala* of conception and condition of uterus.
- Diatec regimen of the mother during pregnancy.
- Presence of diseases condition in parents.
- Characteristics of *mahabhutas* which comprising foetus, etc.

#### *Bija*, *Bijabhaga* and *Bijabhagavayava*:

Ayurveda described three components as main genetic unit; *Beeja*, *Beejbhaga* and *Beejbhagavyava*. The smallest unit of *Shukra & Shonita* considered as *Beeja* (sperm and ovum). The *Beejbhaga* (chromosomes) is component of *Beeja* which is responsible for development of body organs and tissues. It also transfers genetic information from one generation to other generation. *Beejbhagavyava* (gene) is subtle stage of *beejbhaga* which carry hereditary

characters and responsible for particular manifestation in an individual. Sperm and ovum (*Beejabhaga*) are considered responsible for formation of organ. The vitiation in *beejabhaga* may results defective organ or defective progeny. As per modern science genetic polymorphism may be due to the difference in DNA sequence among individuals which describe specific characteristics of person differing from others.

<i>Beeja</i>	<i>Beejbhaga</i>	<i>Beejbhagavyava</i>
<ul style="list-style-type: none"> <li>• Smallest unit of <i>Shukra &amp; Shonita</i> considered as</li> <li>• Responsible for conception</li> </ul>	<ul style="list-style-type: none"> <li>• Component of <i>Beeja</i> (chromosomes)</li> <li>• Responsible for development of body organs and tissues.</li> </ul>	<ul style="list-style-type: none"> <li>• Subtle stage of <i>beejbhaga</i> (Gene)</li> <li>• Carry hereditary characters and responsible for particular manifestation in an individual.</li> </ul>

**Figure 1: Genetic unites and their functions.**

The birth of twins depends on the manner by which *vayu* divides the *Bija*, the separation of *beeja* by *vayu* if having predominance of *shukra* along with *artava* then male child will be born along with female child. Defected *Beeja* and *Beejbhaga* are responsible for the formation of defective body organ. Disease such as *kushtha* may impart in *bijabhagavyava* and hence may cause same offspring illness. Defect in *bija*, *bijabhaga* and *bijabhagavyava* may lead defect in child depending on gender. The birth of a *bandhya* female child occur when *beejbhag* in ovum is vitiated excessively which is responsible for the development of *garbhashaya*, when the part of *beej* which is responsible for the sperm production in foetus if vitiated excessively then the birth of a sterile male child may occur. Vitiation of *beejbhagavyav* may

lead birth to a *putipraja* while similar case in sperm may gives birth to *Putipraj*.

#### ***Bijabhaga* and *Bijabhagavyava* towards demographic and ethnic variations**

Ayurveda text also described demographic and ethnic variations amongst society may be due to the different *prakriti* associated with the hereditary transformation from one generation to another. This specific hereditary transformation may be responsible for specific *prakriti* of cast (*Jati Prasakta*), specific *prakriti* of race (*Kula Prasakta*) and specific *prakriti* of locality (*Deshanupatini*). The chromosomal transformation play vital role towards the distinguish characteristics of one population from other one. In ayurveda *Beejbhagavyava* contributes towards this factor.

**Table 1: Charaka mentioned contribution of Bijabhaga and Bijabhagavayava towards specific characters of fetus:**

1	Characters linked to specific race	<i>Jatiprasakta</i>
2	Familial characters	<i>Kulaprasakta</i>
3	Geographical characters	<i>Deshanupatini</i>
4	Seasonal variations at the time of conception	<i>Kalanupatini</i>
5	Age dependent characters	<i>Vayanupatini</i>

**Genesis towards Prakriti**

The inherited characters of foetus may be associated with various originated factors such as;

- ❖ Characters associated with father (*Pitrija*).
- ❖ Characters associated with mother (*Maatrija*).
- ❖ Characters associated with soul (*Atmaja*).
- ❖ Characters associated with mind (*Satvaja*).
- ❖ Characters associated with diet (*Rasaja*).
- ❖ Characters associated with homologation (*Satmyaja*).

These all factors are responsible for the characters of individuals and nature of *Bija*, *Bijabhaga* and *Bijabhagavayava* contributes significantly towards these factors. *Bija*, *Bijabhaga* and *Bijabhagavayava* transform characters from father and mother to fetus and contributes towards *Shukrashonita Prakriti*, characters from season and uterine environment responsible for *Kalgarbhashaya Prakriti*, characters related to diet and lifestyle of pregnant mother resulted *Maturahara Vihara Prakriti* and attributes of *Mahaabhuta* towards *Prakriti* termed as *Pancha Mahabhuta Vikara Prakriti*. All these factors affect *Prakriti* of an individual at genetic level. Inherited characters from parents given more importance by *Vagbhata* and *Sushruta*, *Charaka* and *Kashyapa* emphasized on environmental factors towards *Prakriti* contribution. *Nagarjuna* consider environmental factors related to *Prakriti* of new born. *Kashyapa* had given importance to diet of pregnant mother towards the *Prakriti* of fetus.

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**CONFLICTS OF INTEREST**

The author declares that there are no conflicts of interest.

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