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Genetics in Ayurveda: Exploring the Concepts of Bija, Bijabhaga, and Bijabhagavayava

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ABSTRACT :-

In its extensive literature, the ancient Indian medical system known as Ayurveda, which has been in use for thousands of years, makes mention to the idea of genetics. Ayurvedic scholar Sushruta classified congenital and hereditary disorders, including prameha, klaibya, and sthaulya, as resulting from faults in the genetic components. Additionally, Ayurveda emphasizes how genetic variances impact prakriti, or individual constitution. Accordingly, Ayurveda holds that a person's health and well-being are greatly influenced by their genetic makeup. Ayurveda uses terms like Beeja (chromosome), Beejabhaga (genes), and Beejabhagavayava (fractions or sections of chromosomes) to describe sperm and ovum abnormalities. Together with other variables, they are thought to be the cause of genetic disorders. The Ayurvedic view of genetics is examined in this article, with special attention paid to Beejabhaga and Beejabhagavayava.

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

Introduction:

Ayurveda explains genetics in terms of the quantitative and qualitative dominance of doshas from birth, which establish a person's unique constitution (prakriti). The qualities of shukra (semen) and shonita (ovum), which unite during conception to form progeny, have an impact on the dosha dominance. Abnormalities in shukra and shonita are the root cause of hereditary illnesses. Additionally, Ayurveda presents the idea of Beejabhaga, which refers to illnesses like yonivyapad (female reproductive problems) that are brought on by ovum abnormalities.

Infertility may arise from damage to the genetic material of the ovum (Beejabhaga), whereas putipraja (dead fetus) may occur from damage to certain portions of this genetic material (Beejabhagavayava). Suchimukhi yonivyapat is one disorder that can result from maternal abnormalities. Furthermore, illnesses like yakshma (tuberculosis), arsha (hemorrhoids), prameha (diabetes), and kustha (skin diseases) may also be seen as genetic disorders resulting from flaws in shukra and shonita.

Chromosomal Abnormality :-

The rare chromosomal disorders include samskarvahi, vakri, irsyabhirati, and vatikshanda. Other chromosomal disorders are as follows
Dwireta – A condition in which an individual has both testicular and ovarian tissue.
Pavanendriya – Involuntary infertility and azoospermia with no clear cause.
Narashanda – Male pseudohermaphroditism, where the person has a female karyotype but the external genitalia appear male.
The factors contributing to the prevalence of genetic disorders are as follows:

1. Defects in shukra (semen) and shonita (ovum).
2. Bija, Bijabhaga, and Bijabhagavayava.
3. Timing of conception and the condition of the uterus.
4. Maternal diet and regimen during pregnancy.
5. Presence of diseases in the parents.
6. Characteristics of the mahabhutas (elements) that make up the fetus, etc.

Bija, Bijabhaga and Bijabhagavayava :

Ayurveda identifies three key components as the primary genetic units:

Beeja- The smallest unit of Shukra (semen) and Shonita (ovum) is considered Beeja (sperm and ovum).
Beejabhaga (chromosomes)- is a component of Beeja, responsible for the development of body organs and tissues, as well as for transferring genetic information across generations.
Beejabhagavayava (genes)- represents a more subtle level of Beejabhaga, carrying hereditary traits and influencing specific manifestations in an individual.
Sperm and ovum (Beejabhaga) are responsible for the formation of organs. Vitiation in Beejabhaga can result in defective organs or progeny. According to modern science, genetic polymorphism arises from differences in DNA sequences among individuals, which define unique characteristics that distinguish one person from another.

Beeja	Beejbhaga	Beejbhagavayava
The smallest unit of Shukra and Shonita is considered responsible for conception.	The components of Beeja (chromosomes) are responsible for the development of body organs and tissues.	The subtle stage of beejbhaga (gene) carries hereditary traits and is responsible for specific characteristics expressed in an individual

Figure : Genetic unites and their functions.

How Vayu splits the Bija determines whether twins will be born. A male and female kid will be produced if the Bija is divided by Vayu and has a preponderance of Shukra and Artava. The development of aberrant bodily organs can result from defects in the Bija and Beejbhaga. The Beejbhagavayava may be impacted by diseases such as Kushtha, which might result in similar ailments in their progeny. Depending on the gender, any flaw in the Bija, Beejbhaga, or Beejbhagavayava may result in flaws in the kid.
If the Beejbhag in the ovum is too vitiated, it might influence the development of the Garbhashaya and result in the birth of a Bandhya female kid. A sterile male infant may be produced if the area of the Beej that produces sperm in the fetus is severely vitiated. A Putipraja may originate from vitiation of the Beejbhagavayava, and a Putipraja may also arise from a similar problem with the sperm.

Bijabhaga and Bijabhagavayava influence demographic and ethnic variations-

According to Ayurvedic scriptures, ethnic and demographic differences within a culture may be caused by inherited changes that have been handed down through the generations and have an impact on various prakritis. The particular prakriti of a caste (Jati Prasakta), race (Kula Prasakta), or locale (Deshanupatini) may be influenced by these genetic alterations. In Ayurveda, Beejbhagavayava plays a part in chromosomal alterations, which are essential for differentiating the traits of different populations.

Aacharya Charaka mentioned contribution of Bijabhaga and Bijabhagavayava towards specific characters of fetus

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

The origin of Prakriti is linked to its formation and development.
The inherited traits of a fetus may be influenced by various factors, including:

1. Traits inherited from the father (Pitrija)
2. Traits inherited from the mother (Maatrija)
3. Traits linked to the soul (Atmaja)
4. Traits influenced by the mind (Satvaja)
5. Traits related to diet (Rasaja)
6. Traits connected to adaptation (Satmyaja)

Individuals' qualities are shaped by all of these variables, with Bija, Bijabhaga, and Bijabhagavayava largely contributing to these impacts. Shukrashonita Prakriti is affected by Bija, Bijabhaga, and Bijabhagavayava, which pass on characteristics from the mother and father to the fetus. While Maturahara Vihara Prakriti is influenced by the expectant mother's food and lifestyle, Kalgarbhashaya Prakriti is influenced by the season and the uterine environment. Prakriti, also known as Pancha Mahabhuta Vikara Prakriti, is influenced by the qualities of the Mahaabhuta. All of these elements have a hereditary impact on a person's Prakriti.
While Acharya Charaka and Acharya Kashyapa concentrated on the impact of external circumstances on Prakriti, Acharya Vagbhata and Acharya Sushruta highlighted the inherited qualities from parents. Aacharya Kashyapa stressed the significance of the expectant mother's food in influencing the fetus's Prakriti, whereas Aacharya Nagarjuna focused on the environmental elements associated with a newborn's Prakriti.

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