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Review Article

A REVIEW ON ROLE OF *PANCHAMABHUTA* IN *GARBHA UTPATTI*

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ABSTRACT

In present days of globalizations all are concentrated in finding basics of transformations or existence. The concept of *Panchamahabhuta* (five basic elements) has been scientifically explained in Ayurveda. *Panchamahabhuta* are important components of the body. It is the five basic constituents which exist in the universe and human beings; they are *Akasha, Vayu, Agni, Jala* and *Prithvi*. The union of *Shukra* (sperm) and *Shonitha* (ovum) and *Atma* (soul) in the *Kukshi* (uterus) is designated as *Garbha* (embryo). The five *Mahabhuta* (basic elements) play a important role in formation, development and maintenance of *Garbha* (embryo). The five elements refer to etheric, gaseous, radiant, fluid and solid states of matter. *Mahabhutha* plays an important role in *Garbhautpatti* (embryogenesis). It helps in separation and segregation of cell mass, nourishment, structural development etc. The present work is to study the concept of these five elements in embryogenesis.

KEYWORDS: *Mahabhuta, Shukra, Shonitha, Garbha*, Emryogenesis.

INTRODUCTION

The word *Panchamahabhuta* is made up of three words; *'Pancha'*-five, *'Maha'*-great, *'Bhuta'*-that which exists[1]. All living beings and non-living objects in the universe are made up of *Panchamahabhuta*[2]. The five elements are *Akasha mahabhuta*, *Vayu mahabhuta*, *Agni mahabhuta*, *Jalamahabhuta*, *Prithvi mahabhuta*[3]. The *Purusha* is being formed by combination of *Panchamahabhuta* and *Chetana* (consciousness)[4]. Each *Mahabhuta* possesses specific characteristic feature like;

a) *Akasha mahabhuta*- Free flow (*Apratighatata*)

b) *Vayu mahabhuta*- Mobility (*Chalatva*)

c) *Agni mahabhuta*- Heat (*Ushnatva*)

d) *Jalamahabhuta*- Liquidity (*Dravatva*)

e) *Prithvi mahabhuta*- Roughness (*Kharatva*)

These criteria are applied to assess fundamental composition of an element. We found references regarding development of embryo (*Garbha*) with the help of five basic elements. Acharya charaka, Sushrutha, Vagbhatta, Bhavamishra have opined various views regarding composition of body by *Mahabhutas* (basic elements) and *Chetana* (soul).

The term "*Garbha*" include embryo, zygote and foetus. *Garbha vriddikarabhavas* are specific factors responsible for foetal growth and development. Influence of five basic elements play a vital role in *Garbha utpatti* (embryogenesis) and the same is carried throughout the life.

AIMS AND OBJECTIVES

1) Conceptual study of role of *Panchamahabhuta* in *Garbhautpatti*
2) Analysis of *Panchabhoutic* constitution and function in embryo

MATERIALS AND METHODS

Role of *Panchamahabhuta* (five basic elements) in *Garbhotpatti* (embryogenesis) in classical text are:

Source of five basic elements in foetus

According to Acharya Charaka

a) Those from the *Mata* (Mother's ovum)

b) Those from *Pitru* (Father's sperm)

c) Those from *Ahara* (diet) of mother (pregnant lady)

d) Those from *Atmakrta* (soul) entering into the foetus (*Garbha*)

The elements from maternal sources (*mata*) and paternal sources (*Pitru*) are derived through *Rajah* (ovum) and *Shukra* (sperm). The elements from digested food products is *Ahara* (diet)[5]. These provide nourishment to ovum and sperm.

Descent of Components in the Foetus

Acharya charaka states that soul (*Chetana*) unites with the *Akasha mahabhuta* first and then it further unites with other four basic elements (*Vayu,*

Agni, Jala, Prithvi). It is said that God equipped with *Manas* (mind) created *Akasha mahabhuta* first and rest of them (basic elements) are created thereafter[6].

Components derived from each *Panchamahabhuta* (five elements)

a) *Akasha mahabhuta*

Table 1: Components derived from *Akasha*

Components	Charaka[7]	Sushrutha[8]	Vagbhatta I[9]	Vagbhatta II[10]	Kashyapa[11]
Shabda (sound)	+	+	+	+	+
Shabdendriya (auditory system)	+	+	+	+	+
Laghava (lightness)	+	-	-	-	+
Saukshmya (minuteness)	+	-	-	-	+
Viveka (division)	+	+	+	+	+
Srotasa (channels)	-	-	+	-	-
Sarvachidrasamuha		+			
Mukha (oral cavity)			-	-	+
Kantha (throat)	-		-	-	+
Koshta (abdominal cavity)	-		-	-	+

b) *Vayu mahabhuta*

Table 2: Components derived from *Vayu*

Components	Charaka[7]	Sushrutha[8]	Vagbhatta I[9]	Vagbhatta II[10]	Kashyapa[11]
Sparsha (touch sensation)	+	+	+	+	+
Sparshanendriya (organ of sense of touch)	+	+	+	-	+
Chesta/Parispandana (activity)	+	+	+	-	+
Laghava (lightness)	-	+	+	-	-
Sarvashareeraspandana	-	+	+	-	-
Dhatu-vyuhana (formation and transformation of tissues)	+	-	-	-	+
Ucchvasa (expiration)	-	-	+	+	-
Raukshya (dryness)	+	-	-	-	+
Prerana (dryness)	+	-	-	-	+
Prana (respiration)	-	-	-	-	+
Apana (flatus)	-	-	-	-	+

c) *Agnimahabhuta*

Table 3: Components derived from *Agni*

Components	Charaka[7]	Sushrutha[8]	Vagbhatta I[9]	Vagbhatta II[10]	Kashyapa[11]
Rupa (structure)	+	+	+	+	+
Chakshuindriya (ophthalmic apparatus)	+	+	+	+	+
Pakti (metabolism)	+	+	+	+	+
Ushma (body heat)	+	+	+	-	+
Varna (complexion)	-	+	+	-	-
Bhrajisnutha (splendor)	-	+	-	-	-
Amarasa (intolerance)	-	+	-	-	-
Taikshnya (sharpness)	-	+	-	-	-
Saurya (valour)	-	+	+	-	-
Santapa (temperature)	-	+	+	-	-
Prakasha (light)	+	-	-	-	+
Pitta (enzymes)	-	-	+	-	+
Teja	-	-	+	-	+
Medha (intelligence)	-	-	+	-	-
Shareera-vriddi (growth)	-	-	-	-	+

d) *Jalamahabhuta*

Table 4: Components derived from *Jala*

Components	Charaka[7]	Sushrutha[8]	Vagbhatta I[9]	Vagbhatta II[10]	Kashyapa[11]
Rasa (taste)	+	+	+	+	+
Rasnendriya (gustatory system)	+	+	+	+	+
Saitya (coldness)	+	+	+	-	+
Mardava (softness)	+	-	-	-	+
Sneha (unctuousness)	+	+	+	-	+
Mutra (urine)	-	+	+	-	+
Rasadhatu	-	+	-	-	-
Kleda (moisture)	+	-	+	+	+
Asruk (blood)	-	-	+	-	+
Vasa/Medas (fat)	-	-	+	-	+
Sweda (sweat)	-	-	+	-	-
Mamsa (flesh)	-	-	-	-	+
Shukra (semen)	-	+	+	-	+

e) *Prithvimahabhuta*

Table 5: Components derived from *Prithvi*

Components	Charaka[7]	Sushrutha[8]	Vagbhatta I[9]	Vagbhatta II[10]	Kashyapa[11]
Gandha (smell)	+	+	+	+	+
Granedriya (olfactory organs)	+	+	+	+	+
Gaurava (heaviness)	+	+	+	-	+
Sthairya (stability)	+	-	-	-	+
Murthi (structure of body)	+	+	-	-	+
Kesha (hair)	-	-	+	-	-
Asthi (bones)	-	-	+	+	-
Dhairya (patience)	-	-	+	-	-
Nakha (nails)	-	-	+	-	-

Specific function of *Vayu* is *Vibhajana* (Cell division), *Teja* is *Pachana* (Metabolism), *Jala* is *Kledana* (Moistening), *Prithvi* is *Samhanana* (Hardness) and *Akasha* is *Vivardhana* (Enlarges)[12].

Acharya Dalhana commenting on above says that the division of *Dosha*, *Dhatu*, *Mala*, *Anga* and *Pratyanga* (minor and major parts of body) is done by *Vayumahabhuta*. The definitive human shape and structure is provided by *Teja*. It also gives complexion to the body. The *Kleda* (moistening) that is dryness and absorption caused by *Vayu* and *Teja* are normalised by *Jalamahabhuta*. The softened foetus regains hardness and specific shape (*Rupa*) by *Prithvimahabhuta*. Thus formed foetus increases in size by *Adhmapana* (inflating) to *Srotas* (channels) which runs all over the body in *Urdhva* (upward), *Adhah* (downward) and *Tiryak* (oblique) directions by the influence of *Akashamahabhuta*[13].

Bhavamishra opines that *Agnimahabhuta* performs metabolic (*Pachana*) functions of the foetus and maintains the life of the *Garbha* (foetus)[14].

Role of *Mahabhuta* in Complexion of the Foetus

Table 6: Factors for formation of body complexion

Complexion	Sushrutha[15]	Charaka[16]	Vagbhatta I[17]
Gaura (fair)	*Teja* +	*Teja* +	*Teja* +
	Jala	*Jala* +	*Jala* +
		Akasha	*Akasha*
Krishna (black)	*Teja* +	*Teja* +	*Teja* +
	Prithvi	*Prithvi* +	*Prithvi* +
		Vayu	*Vayu*
Shyama	-	Equal Proportions	Equal proportions
Gaurashyama	*Teja* +		
	Jala +		
	Akasha		

Krishnashyama	*Teja* +		
	Prithvi +		
	Akasha		

DISCUSSION

Basically *Shukra* (sperm) is *Sowmya* while *Arthava* (Ovum) is *Agneya*. The role of all *Pancha mabhuta* can be understood as.[12]

a) *Vayu-Vibhajana*

Vayumahabhuta helps in cell divisions; it controls the movement of gases and impulses.

b) *Teja-Pachana*

Agnimahabhuta dissolves the cells of zona pellucida and enables developing cells to connect with endometrium after implantation. Various actions of enzymes are attributed to *Agnimahabhuta*.

c) *Aapa-Kledana*

Jalamahabhuta provide moistness and nourishment to dividing cells and helps in growth of tissues. It exists in the later life as CSF, ECF, Plasma, Saliva, Urine etc.

d) *Prithvi- Samhanana*

Prithvimahabhuta provides *Rupa* (structure) and *Akara* (shape) to the body. Bones, muscles, hair, teeth and other compact structures are derived from *Prithvimahabhuta*.

e) *Akasha-Vivardhana*

Akashamahabhuta provides spaces in the cells for their development, this can be understood as multi-dimensional development of cells.

Mahabhuta as a Factor for Embryogenesis

All the scholars emphasis the concept of *Panchamabhuta* in growth, development and differentiation. *Panchamahabhuta* play a most important role after formation of *Garbha* as well as its subsequent development. Its role begins from birth and continues till death. Actions such as *Vibhajana* (division), *Pachana* (metabolism), *Kledana* (moistening), *Samhanana* (solidification) and *Vivardhana* (expansion) are carried out by *Vayu*, *Teja*, *Jala*, *Prithvi*, *Akashamahabhuta* respectively. The functions of *Mahabhuta* can be interpreted with different stages of embroyology[18];

1) Functions of *Vayumahabhuta* can be seen in descent of zygote into uterine cavity, karyokynesis, differentiation of trophoblast into cytotrophoblast and syncytotrophoblast, formation of trilamellar disc, yolk sac, amnion.
2) Functions of *Tejamahabhuta* is observed in proteolytic action of trophoblast for embedding, disappearance of zona pellucida assisted by trypsin like enzymes.
3) Functions of *Jalamahabhuta* can be interpreted as nourishment and protection of embryoblast by trophoblast, decidual changes containing glycogen and lipid facilitates ovum to get embedded in the wall of uterus, nourishment through utero-placental and feto-placental circulation, subsequent formation of fluids and cavities in the body (example-synovial fluid).
4) Functions of *Prithvimahabhuta* is observed as maintaining grouping and compactness of cells under division, gives shape to all structures formed during the time of growth and development, forms bones and skeleton which gives shape to the foetus.
5) Functions of *Akasha mahabhuta* is understood as blastocele formation, amniotic cavity formation, yolk sac formation, vitellointestinal duct, allontosis and EEC, trophoblastic lacunae which later forms intervillous spaces, formation of foregut, midgut and hindgut.

If these functions are carried out in normal proportion the normal structure of the body (*Shareera*) is formed[19]. *Mahabhuta* also helps in constituting *Doshic* combination (*Prakrithi*-physical constitution) in the body. The foetus gets afflicted with one or more *Doshas* which are dominantly associated and forms the physical constitution of an individual in the foetus[20].

CONCLUSION

All body components are derived from *Panchamahabhuta*. It is difficult to say that one particular component is derived from one particular *Mahabhuata*. Influence of *Mahabhuta* play a vital role in *Garbhautpatti* (embryogenesis) and the same is carried out throughout the life. The science thus seems to include every aspect of embryology starting with fertilization upto development. The five *Mahabhutas* (basic elements) along with *Shukra* (sperm) and *Shonitha* (ovum) helps in conversion of embryo into *Hasta* (hands), *Pada* (legs), *Jihva* (tongue), *Nitamba* (buttocks) and so on. This is found to be achieved by various functions of basic elements such as division, assimilation, metabolism etc. Thus the whole *Shareera* (body) is constituted. Human body contains 4 *Shakha* (limbs), *Madhya* (middle part) and *Shira* (head)[12].

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