



## UNIQUE JOURNAL OF AYURVEDIC AND HERBAL MEDICINES

Available online: [www.ujconline.net](http://www.ujconline.net)

Review Article

### A REVIEW ON THE ROLE OF *PANCHAMAHA BHUTA* IN DEVELOPMENT OF FOETUS

Mohd. Ashraf Khan<sup>1\*</sup>, Hena Khatoon<sup>2</sup>, Awasthi HH<sup>3</sup>

<sup>1</sup>Lecturer, Dept. of Rachana Sharir, Shri Krishna Ayurvedic Medical College, Varanasi, U.P, India

<sup>2</sup>Junior Resident, Dept. of Siddhant Darshan, Faculty of Ayurveda, I.M.S, B.H.U, Varanasi, U.P, India

<sup>3</sup>Professor & Head, Dept. of Rachana Sharir, Faculty of Ayurveda, I.M.S, B.H.U, Varanasi, U.P, India

Received 25-12-2014; Revised 23-01-2015; Accepted 21-02-2015

\*Corresponding Author: Dr. Mohd. Ashraf Khan

Lecturer, Dept. of Rachana Sharir, Shri Krishna Ayurvedic Medical College, Cholakpur, Varanasi, 221001

#### ABSTRACT

*Panchamahabhuta* is the core fundamental aspects of *Ayurveda*. It is the five basic material constituents which exist in the universe and human beings viz. *Akasha*, *Vayu*, *Agni*, *Jala* and *Prithvi*. The original substance of this group pervades the universe and is not completely observable; hence it is called the great element, *Mahabhuta*. These elements refer to the etheric, gaseous, radiant, fluid and solid states of matter and the principles of space, movement, light, cohesion and densification that work through them.

Depending upon the predominance of the content the matter is classified as *Parthiva*, *Apya*, *Taijasa*, *Vavaviya* and *Akashiya*. The permutation and combination of these elements and its quantity in a given matter determines its properties.

**Keywords:** *Mahabhuta*, *Garbha*, *Atma*, Foetus, *Shukra*, *Artava*

#### INTRODUCTION

*Acharya Charak* said that the embryo is formed by the five *Mahabhutas*, viz. *Akasha*, *Vayu*, *Agni*, *Jala* and *Prithvi* and it serves as the receptacle of *Chetana* (consciousness). In fact, the Soul (conscious element) constitutes the sixth *Dhatu* (element) responsible for the formation of *Garbha* (embryo)<sup>1</sup>.

*Acharya Vagbhata* I and *Bhavamisra* have also corroborated that the body is composed of the *Mahabhutas* and combined also with *Chetana*, give life to the *Garbha* (foetus)<sup>2,3</sup>.

#### Sequence of descent of various components in Foetus

*Acharya Charak* said that Soul, first of all, unites with *Akasha* before uniting with the other *Bhutas*. This is like the creation of *Akasha* by God after the period of deluge. As God, the indestructible one, equipped with the *Manas* (mind) creates *Akasha* first, and then the other *Bhutas* whose attributes are more and more manifested successively, so does the Soul, desirous of creating another body, first of all, unites with the *Akasha*, and then with other four *Bhutas* whose attributes are more and more manifested successively. All this action (association of the Soul with the five *Mahabhutas*) takes place in a very short time<sup>4</sup>.

#### Sources of *Pancha Mahabhutas* in Foetus

According to *Acharya Charak* the *Garbha* (foetus) are composed of four *Mahabhutas*. Each of these *Mahabhutas* is again of four types:

- (1) Those from the *Mata* (mother's ovum).
- (2) Those from the *Pitra* (father's sperm).
- (3) Those from the *Ahara* (diet) of the pregnant mother and
- (4) Those accompanying the *Atmakrita* (by Soul) which enters into the *Garbha* (foetus).

*Acharya Charak* added that in the body of living beings, there are sixteen types of *Bhutas*. They are derived from *Rasa* (digestive product of mother's food), *Atma* (Soul) and *Mata-Pita* (mother and father). Four of these *Bhutas* accompany the *Atma* (Soul) and the *Atma* Himself depends upon four of them for His existence. *Bhutas* from the *Mata-Pita* (mother and father) are derived through their *Rajah* and *Shukra* (ovum and sperm). It is the *Rasa* (digestive product of food) which provides nourishment in the form of *Bhutas* to the *Shukra* and *Asrk* (sperm and ovum)<sup>5</sup>.

#### *Bhautik* component of Foetus

**Table 1: Showing the components derived from Akasha**

Components	Charak <sup>6</sup>	Sushruta <sup>7</sup>	VagbhataI <sup>8</sup>	VagbhataII <sup>9</sup>	Kasyapa <sup>10</sup>
<i>Sabda</i> (sound)	+	+	+	+	+
<i>Sabdendriya</i> (auditory system)	+	+	+	+	+
<i>Laghava</i> (lightness)	+		-	-	+
<i>Sauksmya</i> (minuteness)	+		-	-	+
<i>Viveka</i> (division)	+	+	+	+	+
<i>Srotasa</i> (channels)	-		+	-	-
<i>Sarvachidra Samuha</i>		+			
<i>Mukha</i> (oral cavity)	-		-	-	+
<i>Kantha</i> (throat)	-		-	-	+
<i>Kostha</i> (abdominal cavity)	-		-	-	+

*Sushruta* has not included *Laghava* and *Sauksmya* of *Charak*, *Viveka* and *Srotas* of *Astanga Samgrah* and *Mukha*, *Kantha* and *Kostha* of *Kasyapa*.

*Dalhana* here, mentioning the view of *Gayi*, said that he reads *Viriktakta* in place of *Viviktata* and interprets it as space within organs.

**Table 2: Showing the components derived from Vayu**

Components	Charak <sup>6</sup>	Sushruta <sup>7</sup>	VagbhataI <sup>8</sup>	VagbhataII <sup>9</sup>	Kasyapa <sup>10</sup>
<i>Sparsa</i> (sense of touch)	+	+	+	+	+
<i>Sparsanendriya</i> (organ of sense of touch)	+	+	+	-	+
<i>Chesta</i> or <i>Parispandana</i> (activity of body)	+	+	+	-	+
<i>Laghava</i> (lightness)	-	+	+	-	-
<i>Sarva Sharir Spandana</i>	-	+	+	-	-
<i>Dhatu -Vyuhana</i> (formation or transformation of <i>Dhatu</i> s)	+	-	-	-	+
<i>Ucchavasa</i> (expiration)	-	-	+	+	-
<i>Rauksya</i> (dryness)	+	-	-	-	+
<i>Prerana</i> (dryness)	+	-	-	-	+
<i>Prana</i> (inspiration and expiration)	-	-	-	-	+
<i>Apana</i> (flatus)	-	-	-	-	+

*Sushruta* and *Vagbhata I* had included *Laghava* in components derived from *Vayu*. While *Charak* has included in the components derived from *Akasha*. *Sushruta* had not included

*Rauksya* and *Prerana* of *Charak* and *Kasyapa*. *Vagbhata I* has included an additional component *Ucchavasa* while *Kasyapa* had included an additional component *Prana* and *Apana*.

**Table 3: Showing the components derived from Agni**

Components	Charak <sup>6</sup>	Sushruta <sup>7</sup>	VagbhataI <sup>8</sup>	VagbhataII <sup>9</sup>	Kasyapa <sup>10</sup>
<i>Rupa</i> (form)	+	+	+	+	+
<i>Chaksu-Indriya</i> (ophthalmic apparatus)	+	+	+	+	+
<i>Pakti</i> (metabolism)	+	+	+	+	+
<i>Usma</i> (body-heat)	+	+	+	-	+
<i>Varna</i> (complexion)	-	+	+	-	-
<i>Bhrajisnuta</i> (splendor)	-	+	-	-	-
<i>Amarasa</i> (intolerance)	-	+	-	-	-
<i>Taiksnya</i> (Sharpness)	-	+	-	-	-
<i>Saurya</i> (Valour)	-	+	+	-	-
<i>Santapa</i>	-	+	+	-	-
<i>Prakasa</i> (light)	+	-	-	-	+
<i>Pitta</i> (metabolic enzymes)	-	-	+	-	+
<i>Teja</i> (sharpness or brightness)	-	-	+	-	+
<i>Medha</i>			+		
<i>Sharir-Vrddhi</i> (growth of body)	-	-	-	-	+

*Sushruta* has included an additional component *Bhrajisnuta*, *Amarasa*, *Taiksnya*. *Sushruta* has not included *Prakasa* as a component, which is included by *Charak* and *Kasyapa*.

*Vagbhata I* and *Kasyapa* have included *Pitta*, *Teja* and *Medha* as additional components.

Table 4: Showing the components derived from *Jala*

Components	Charak <sup>6</sup>	Sushruta <sup>7</sup>	Vagbhata <sup>8</sup>	VagbhataII <sup>9</sup>	Kasyapa <sup>10</sup>
Rasa (taste)	+	+	+	+	+
Rasanendriya (gustatory system)	+	+	+	+	+
Saitya (coldness)	+	+	+	-	+
Mardava (softness)	+	-	-	-	+
Sneha (unctuousness)	+	+	+	-	+
Shukra (semen)	-	+	+	-	+
Mutra or urine (etc. watery substance)	-	+	+	-	+
Rasa Dhatu	-	+	-	-	-
Kleda (moisture)	+	-	+	+	+
Asrk (blood)	-	-	+	-	+
Vasa or Medas (fat)	-	-	+	-	+
Sveda (sweat)			+		
Mamsa (flesh)	-	-	-	-	+

*Sushruta* has included *Rasa Dhatu* as an additional component and not included *Mardava* and *Kleda*. *Vagbhata I* have included *Sveda* as additional components. *Kasyapa* has included *Mamsa* as additional component.

All body fluids are formed in embryonic life by the *Jala Mahabhuta*.

Table 5: Showing the components derived from *Prithvi*

Components	Charak <sup>6</sup>	Sushruta <sup>7</sup>	Vagbhata <sup>8</sup>	VagbhataII <sup>9</sup>	Kasyapa <sup>10</sup>
Gandha (smell)	+	+	+	+	+
Ghranendriya (olfactory organs)	+	+	+	+	+
Gaurava (heaviness)	+	+	+	-	+
Sthairya (stability)	+	-	-	-	+
Murti (stiffness or structure of body)	+	+	-	-	+
Kesa (hair)	-	-	+	-	-
Asthi (bones)	-	-	+	+	-
Dhairya (patience)	-	-	+	-	-
Nakha (nails)	-	-	+	-	-

*Sushruta* has not included *Sthairya* component of *Charak*. *Vagbhata I* has included *Kesa*, *Asthi*, *Dhairya*, *Nakha* as additional components. *Vagbhata II* has also included the component *Asthi*.

#### Specific function of *Pancha Mahabhutas* in development of Foetus

According to *Acharya Sushruta* in *Chetan* (alive) *Garbha*, *Vayu Bhuta* does *Vibhajana* (cell division), *Tejas Bhuta* does *Pachana*, *Jala Bhuta* does *Kledana* (moistens), *Prithvi Bhuta* does *Samhanana* (hardness), and *Akasha Bhuta* does *Vivardhana* (enlarges)<sup>11</sup>.

*Acharya Dalhana* clarifying the above verse says that only because of *Chetana* the *Garbha* remains alive up to the time of *Prasavakala* (delivery), in absence of this it gets *Kuthita* (putrefied) or *Vishna* (degenerated). The division of *Dosa*, *Dhatu*, *Mala*, *Anga* and *Pratyanga* (major and minor body parts) is done by *Vayu*. The *Teja* by its function of *Pachana* (metabolism) changes the *Rupa* (shape), provides general appearance like human structure etc. along with specific features and complexion. *Kleda* (moistening) is done by *Jala* or in other words the dryness or absorption caused by *Vibhaga* (division) and *Parinama* (metabolism) being done by *Vayu* and *Teja* respectively is normalized by moistening action of *Jala*. The *Prithvi* perform *Samhanana* (hardness) or gives shape to *Garbha* already moistened by *Jala*. The *Vivardhana*

(enlargement) is done by *Akasha* by providing space with *Adhmapana* (inflating or blowing upon) to the *Srotas* (channels) running all around the body i.e. in *Urdhva* (up), *Adhah* (down) and *Tiryaga* (oblique) directions, which are created by *Vidarana* (splitting or division) done by *Vayu* and *Agni*<sup>12</sup>.

*Acharya Bhavamisra* corroborating the earlier views regarding *Prithvi*, *Vayu* and *Akasha* explains that *Agni* or *Tejas* stays in the body in the form of *Pachaka*, *Alochaka*, *Ranjaka*, *Bhrajaka* and *Sadhaka* *Pitta* along with specific *Agnis* of *Pancha Mahabhutas* and seven *Dhatu*s. It is *Adhidaiva* (God or commander) of *Vani* (speech). By performing metabolic functions it maintains the life of *Garbha*. *Jala* stays in the form of all the five types of *Sleshma*, *Rasa* and *Shukra* etc. liquid substances and power of taste organ. It is God of *Manas*. *Jala* or *Soma* after nourishing *Oja* etc, *Dhatu*s and moistening the dryness created by *Vayu* and *Agni* maintains the life of *Garbha* (foetus)<sup>13</sup>.

#### Specific role of *Vayu* and *Agni* in development of Foetus

*Acharya Sushruta* said that growth of the *Garbha* (foetus) is brought about by *Rasa* and *Maruta Adhmana* (inflated by *Vata*)<sup>14</sup>.

*Jyoti Sthana* is present behind the *Nabhi* (umbilicus of the *Garbha*) when it is inflated by *Vata* combined with *Usma* (heat / *Pitta*), performs development of body by splitting

*Urdhva* (upward), *Adhah* (downward) and *Tiryaga* (obliquely) running *Srotas* (channels) and provides specific shape or features to the *Garbha* (foetus)<sup>15</sup>.

*Acharya Kasyapa* said that by nature only, the finest particles (atom) of *Vayu* perform *Samyoga* (union), *Vibhaga* (division), *Chesta* (activities), *Akunchan* (flexion), *Prasarana* (extension), and *Anga Pratyanga* of *Kostha* (formation of major and minor body-parts of abdominal cavity), *Dhatu*, *Chetana* (consciousness) and divide minute *Srotansi* (channels)<sup>16</sup>. All this *Vibhajana* (splitting) and *Dharana* (retention) is done by *Vayu* in association with *Kala* (time factor)<sup>17</sup>.

*Acharya Harita* opines that *Bija* (sperms and ovum) attains the shape of *Kalala* by the action of *Agni* situated in all the five *Bhutas*. *Kalala* gets the shape of *Budbuda* by the action of outside *Vayu*. This *Budbuda* again becoming *Kalala* gets solidified in the shape of *Pinda* (solid) by the action of *Pancha Bhutagni* by further metabolism this mass becomes a heap of

*Ghana* (solid) substance, then *Vyana Vayu* forms the *Panchatatvas*, *Hasta* (arms), *Pada* (legs) and *Shira* (head) etc. body parts. The same internally situated one *Vayu* reaching different parts gives this solid mass a shape of body. *Udana Vayu* which is situated in *Gala Hridaya* (neck and heart) forms *Mukh Dvara* (oral cavity) and its aperture. *Apana Vayu* situated *Adhah* (downwards) clarifies the *Apana Dvara* (anal orifice), similarly internally situated *Vayu* comes out of the body making *Prthaka Prthaka Marga* (different orifices). Thus with the influence of *Vayu*, nine *Dvara* (external meatuses) i.e. *Mukha* (oral), *Ghrana* (both nasal), *Karnau* (both ears), *Netra* (both eyes), *Apana* (anal) and *Mehana* (urinary) are formed<sup>18</sup>.

*Acharya Bhela* lays equal emphasis on the role of *Agni* and *Vayu*, both these entering the *Sharir* (body) form different *Anga Pratyanga* (major and minor body parts), as well as initiate activity and growth<sup>19</sup>.

#### Role of Mahabhuta in complexion of Foetus

**Table 6: Showing the factors for formation of body complexion**

Complexion	<i>Sushruta</i> <sup>20</sup>	<i>Charak</i> <sup>21</sup>	<i>Vagbhata I</i> <sup>22</sup>
<i>Gaura</i> (Fair)	<i>Teja+</i>	<i>Teja+</i>	<i>Teja+</i>
	<i>Jala</i>	<i>Jala+</i>	<i>Jala+</i>
		<i>Akasha</i>	<i>Akasha</i>
<i>Krshna</i> (Black)	<i>Teja+</i>	<i>Teja+</i>	<i>Teja+</i>
	<i>Prithvi</i>	<i>Prithvi+</i>	<i>Prithvi+</i>
		<i>Vayu</i>	<i>Vayu</i>
<i>Shyama</i>	-	All <i>Bhutas</i> equal	All <i>Bhutas</i> equal
<i>Gaura Shyam</i>	<i>Teja+</i>	-	-
	<i>Jala+</i>		
	<i>Akasha</i>		
<i>Krshna Shyam</i>	<i>Teja+</i>	-	-
	<i>Prithvi+</i>		
	<i>Akasha</i>		
<i>Pingla</i> (Tawny)	-	-	-

#### Role in congenital blindness and colour of eyes

*Acharya Sushruta* and *Acharya Vagbhata I* have considered *Teja Dhatu* (*Mahabhuta*) to be responsible for vision. If *Teja Dhatu* does not reach eyes of the *Garbha*, the born child may

be congenitally blind (*Jatyandha*).<sup>23,24</sup>

The colour of eyes is formed due to association of *Rakta*, *Pitta*, *Kapha* or *Vayu* with *Teja Dhatu*, in the following manner:

**Table 7: Showing formation of colour of eyes**

Sl. No.		Colour of Eyes
1.	<i>Teja Dhatu</i> Followed by <i>Rakta</i>	Reddish
2.	<i>Teja Dhatu</i> Followed by <i>Pitta</i>	Yellowish
3.	<i>Teja Dhatu</i> Followed by <i>Sleshma</i>	Whitish
4.	<i>Teja Dhatu</i> Followed by <i>Vayu</i>	Dry, Pink & abnormal in size

## DISCUSSION

*Shukra* belongs to *Jala* (*Saumya*) group, while *Artava* (ovum) represents *Tejas* or *Agni Mahabhuta*, the other *Mahabhutas* role in the development of the *Garbha* is unquestionable. The role of all the elements can be understood in following ways-

#### 1). *Vayurvibhajati*<sup>11</sup>

*Vayu* elements divide the fertilized ovum and so many cells are developed from one unit. It acts as a generator and controller movements of gases and impulses.

#### 2). *Tejaenamachati*<sup>11</sup>

*Agni* elements dissolves the nucleus and nucleus of each of the developing cells during its process of cell division and ultimately, the zona pellucida of multiplying cells also will be dissolved on the 7<sup>th</sup> day of fertilization to enable the developing cells to come in direct contact with endometrium after implantation. It is present in various forms in each and every particle of the body and universe. The function of enzymes (digestive system, metabolism) all denotes *Teja Mahabhuta*.

3). *Apah klediyanti*<sup>11</sup>

*Jala Mahabhuta* provides wetness and moisture which nourishes the dividing cells and helps in the growth of the tissue. It should not be mistranslated to water as it is an all body fluid circulating in different forms in the body like ECF, CSF, Saliva, Plasma etc.

4). *Prithvisamhanti*<sup>11</sup>

A *Prithvi element* brings the accumulation and integrity (*Samhanana*) which maintains the combination and compactness of the cells under the process of division. It gives material forms (*Murti*) and *Akara* (shape) to the body or any *Panchabhautika* substance. It evolved as a result of collocation and condensation among *Tanmatra*. Solid structures of body like bones, teeth, muscle, hairs etc. denotes *Prithvi Mahabhuta*.

5). *Akashamvividhayati*<sup>11</sup>

*Akasha* elements provides *Vividhana* (the action of multidimensional development with porousness of different cells). It is not just a vacuum, but is all occupied by subtle energy potentials.

Developed with the combination of five *Mahabhutas* the combination of *Shukra* and *Shonita* (sperm and ovum) is converted into various parts like *Hasta* (hands), *Pada* (legs), *Jihva* (tongue), *Ghrana* (nose), *Karna* (ear), *Nitamba* (buttocks) etc. are developed and the whole combination is known as *Sharir* (living body). It contains six parts viz. Four *Shakha* (limbs), *Madhya* (middle part) and *Shira* (head)<sup>11</sup>.

## CONCLUSION

The union of *Shukra* (sperm) and *Shonita* (ovum) and the *Atma* (Soul) in the *Kukshi* (uterus) is designated as *Garbha* (embryo).<sup>25</sup> It is formed by the five *Mahabhutas* viz. *Akasha*, *Vayu*, *Agni*, *Jala*, *Prithvi* and serves as receptacle of consciousness. The five elements of the universe are the cause of formation, development and maintenance of the *Garbha* (embryo) or the human body. All the factors of embryo derived from *Matrijabhava* (mother) and from the *Pitrijabhava* (father) also represent the five elements. The body (*Karma Purush* or *Cikitsya Purush*) is the combination of five elements and *Purush*. When *Shukra* (sperm) and *Shonita* (ovum) are united in the *Garbhashaya* (fallopian tube), the combined *Shukra & Shonita Samyoga* (zygote) becomes impregnated with *Jivatma*, it is called *Garbha* or fertilized ovum.

## REFERENCES

1. Sharma RK and Dasa B. Caraka Samhita with English translation and critical exposition, Vol. II Chaukhambha Bharati Sanskrit Series Office, Varanasi, 2001. Page 388
2. Astanga Samgraha, Text, English Translation, Notes, Index, Vol. II by Prof. K.R. Srikantha Murti, Chaukhambha Orientalia, Varanasi, 2009. Page 58
3. Misra Bhava, Bhavaprakasa, Text, English Translation, Notes, Index Vol. I by Prof. K.R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi. Page 61

4. Sharma RK and Dasa B. Caraka Samhita with English translation and critical exposition, Vol. II Chaukhambha Bharati Sanskrit Series Office, Varanasi, 2001. Page 390
5. Sharma RK and Dasa B. Caraka Samhita with English translation and critical exposition, Vol. II Chaukhambha Bharati Sanskrit Series Office, Varanasi, 2001. Page 360
6. Murthy KR. Srikantha, Susruta Samhita with English translation, Vol. I, Chaukhambha Orientalia, Varanasi, 2012 Page 13
7. Sharma RK and Dasa B. Caraka Samhita with English translation and critical exposition, Vol. II Chaukhambha Bharati Sanskrit Series Office, Varanasi, 2001 Page 392
8. Vagbhatta, Astanga Samgraha, Text, English Translation, Notes Index, Vol. II by Prof. K.R. Srikantha Murti, Chaukhambha Orientalia, Varanasi, 2009 Page 59
9. Vagbhatta, Astanga Hridayam, English Translation Vol. I, by Prof. K.R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi, 2010 Page 391
10. Kasyapa, Kasyapa Samhita, Text with English Translation and Commentary, By Prof. P.V. Tewari, Chaukhambha Visvabharati, Varanasi, 2008 Page 117
11. Murthy KR, Srikantha, Susruta Samhita with English translation, Vol. I, Chaukhambha Orientalia, Varanasi, 2012 Page 78
12. Susruta, Susruta Samhita, Nibandha Sangraha Comm. of Dalhanacharya by Yadavji Trikamji, Chaukhambha Krishndas Academy, Varanasi Page 363
13. Misra Bhava, Bhavaprakasa, Text, English Translation, Notes, Index Vol. I by Prof. K.R. Srikantha Murthy, Chaukhambha Krishnadas Academy, Varanasi. Page 62
14. Murthy KR. Srikantha, Susruta Samhita with English translation, Vol. I, Chaukhambha Orientalia, Varanasi, 2012 Page 69
15. Murthy KR. Srikantha, Susruta Samhita with English translation, Vol. I, Chaukhambha Orientalia, Varanasi, 2012 Page 69
16. Kasyapa, Kasyapa Samhita, Text with English Translation and Commentary, By Prof. P.V. Tewari, Chaukhambha Visvabharati, Varanasi, 2008. Page 134
17. Kasyapa, Kasyapa Samhita, Text with English Translation and Commentary, By Prof. P.V. Tewari, Chaukhambha Visvabharati, Varanasi, 2008. Page 117
18. Harita, Harita Samhita, Hindi Comm. by Vaidya Pandey Jaymini, Chaukhambha Visvabharati, Varanasi, 2010. Page 539
19. Maharshi Bhel, Bhel Samhita, Edited with Hindi Comm., by Sri Abhay Katyayan, Chaukhambha Subharati Prakashan, Varanasi. 2009. Page 229

20. Murthy KR. Srikantha, Susruta Samhita with English translation, Vol. I, Chaukhambha Orientalia, Varanasi, 2012. Page 26
21. Sharma RK., and Dasa B. Caraka Samhita with English translation and critical exposition, Vol. II Chaukhambha Bharati Sanskrit Series Office, Varanasi, 2001 Page 470
22. Vagbhatta, Astanga Samgraha, Text, English Translation, Notes Index, Vol. II by Prof. K.R. Shrikantha Murti, Chaukhambha Orientalia, Varanasi , 2009 Page 15
23. Murthy KR Srikantha, Susruta Samhita with English translation, Vol. I, Chaukhambha Orientalia, Varanasi, 2012 Page 27
24. Vagbhatta, Astanga Samgraha, Text, English Translation, Notes Index, Vol. II by Prof. K.R. Shrikantha Murti, Chaukhambha Orientalia, Varanasi , 2009 Page 29
25. Sharma RK and Dasa B. Caraka Samhita with English translation and critical exposition, Vol. II Chaukhambha Bharati Sanskrit Series Office, Varanasi, 2001 Page 388

Source of support: Nil, Conflict of interest: None Declared