

PHYSIOLOGICAL SIGNIFICANCE OF AGNI IN AYURVEDA- A REVIEW ARTICLE

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Article Received on
03 February 2024,

Revised on 23 Feb. 2024,
Accepted on 14 March 2024

DOI: 10.20959/wjpr20246-31783



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ABSTRACT

Ayurveda is the classical, ancient Indian system of life sciences and Medicine. As per *Ayurveda*, when vital entities like *Doshas*, *Dhatus*, and *Malas* are in *sama-awastha* and *Indriya*, *Aatma*, and *Mana* all are functioning properly then this state is considered as '*Swastha*'. Prioritizing this *ayurveda* has described an important factor of digestion and metabolism in our body as *Agni*. *Ayurveda* says no disease is created without the vitiation of *Agni*. Irregularity in the physiology of *Agni* is the primary factor for the production of *Ama* which is the principal cause behind numerous illness. *Agni* plays a huge part to maintain the body homeostasis, and legitimate working of the body. The principal purpose of *Agni* in support is that it helps in the development and improvement of the body. *Agni* figures out which substances enter our cells and tissues and which substances are to be taken out as waste. *Ayurveda* recognizes 13 particular subtypes of *Agni* in the body, each

characterized by its particular physiological capability as well as its area in the body. i.e. 1 *Jatharagni*, 5 *Bhutagni* and 7 *Dhatvagni*. *Agni* has resemblance of power of knowledge inside every cell, tissue, and framework inside the body. The idea of *Agni* in *Ayurveda* refers to the complex capabilities which are credited to *Pitta dosha*. *Agni* is not just responsible for *pachana kriya* in the *Koshtha* (Gastrointestinal region) which does the division of *aahar* into *Sarabhaga* and *Kittabhaga* yet additionally is responsible for metabolic occasions - energy, amalgamation and maintenance of digestion.

KEYWORDS:- *Swastha, Agni, Illness, Koshtha, Sarabhaga, Ama, Digestion.*

INTRODUCTION

The Sanskrit word '*Agni*' indicates 'Fire'. In *Ayurveda*, the expression '*Agni*' is utilized for the act of processing of food and digestion. *Ayurveda* has looked at *Agni* as a vital element for the support of good well-being. *Ayurveda* says if *Agni* isn't in its generally expected state then it will bring about the development of an illness. *Agni* is answerable for engrossing the supplements and fundamental components the body needs while consuming off byproducts.^[1]

Agni converts food in the form of energy, which is responsible for all the vital functions of our body. This *agni* is not in the form of flame as the terrestrial fire but is in the form of liquid which is called as '*Pitta*' in *Ayurveda*. As *Agni* is related to *Pitta* and the sort of *Pitta* which is fundamentally corresponded with *Agni* is *Pachakpitta* which performs *Pakadi Karmas* i.e. it digests food, and isolates *Sara* from *Kitta* of the digested food.

Pachakpitta has the following equivalent words *Jatharagni*, and *Kosthagni*, straightforwardly partakes in the assimilation of food. Consumption of food may be various forms i.e. eatables, beverages, linctus (licked) and masticable foods, which is wholesome if consumed in suitable quantity and free from contamination. These substances undergo metabolic transformation by the effect of *Jatharagni*, *Bhutagni* and *Dhatvagni*. Initially *Jatharagni* gives stimulation to *Bhutagni* because consumed food is *Panchabhautika*, it has to undergo transformation by the respective *Bhutagni*'s then only it becomes easy for tissue metabolism by *Dhatvagnis*. Then processed metabolic products circulate inside the *srotas* continuously by the help of *Vata dosha*. This favours the development, strength, complexion and happiness as well as growth of tissues. *Dhatus* remain in their normalcy after receiving respective nutrients from metabolized food substances. *Jatharagni* is the main principal substance responsible for disease and health.^[2] As it is portrayed in *Ayurveda* *Agni* is having numerous subsidiaries which show the significance of *Agni* as *Ayu* (life span) and that implies it expands the life expectancy of the human when *Agni* works appropriately. Through *Agni varna* (tone) keeps up with the various composition of the body, *Balam* (strength) keeps up with the strength of the body, *Swasthyam* (wellbeing) it keeps up with the wellbeing i.e., physical, mental status of the person, *Utsaha* (energy) it keeps up with the interest of the person in the life, *Upachaya* (body digestion) it keeps up with the stomach related framework and digestion of the body, *Prabha* (gloss) it keeps up with the delicate sheen and delicate gleam of the body, *Ojas* (tissue embodiment) it keeps up with the resistance of the body, *Agnayah* (bio fires) it keeps up with

the stomach related fires of the body, *Prana* (life) it keeps up with the steady existence of the individual.^[3]

The term *Agni* is best addressed by organic fire. *Agni* is essential at physiological and obsessive levels. As we take foodstuffs to take care of ourselves for sustainance, similarly stomach-related fire additionally requires consistent taking care of, in this manner to do different biochemical pathways happening in our body. *Agni* is the reason for all sicknesses implies a larger part of the illnesses are the result of a failure of the *Agni*, which appropriately has been called as integral to wellbeing.^[4]

Agni performs their functions with different intensity and based on this they are categorized as *Tikshnagni*, *Mandagni*, *Vishmagni* and *Samagni*. *Acharya Sushruta* also identifies five types of *Agnis*. These various types of digestive fires perform different activities as mentioned below

- ❖ *Pachakagni* is associated with digestion.
- ❖ *Ranjakagni* is concerned with coloration of bile pigments.
- ❖ *Alochakagni* is associated with vision.
- ❖ *Sadhakagni* is concerned with digestion.
- ❖ *Bhrajakagni* is related with skin.^[5]

Synonyms of *agni*

According to *Shabdkalpadrum*, there are 61 synonyms of *Agni* e.g. *Vaishwanara*, *SarvaPaka*, *Tanoonpata*, *Amivachantana*, *Damunasa*, *Shuchi*, *Vishwambhar*, *Rudra*, *Tejasa*, *Shikhi*, *Anala*, *Vanhi* etc.

Nirukti of *agni*

The word *Agni* is derived from – *Ang Dhatu* & *Gati Pratyaya* which means widely spreading.

Agni in various literatures

In *Brahmasutra*, *Agni* has been intended to be evidence that something is going on under the surface of the body.

In *Shabdakalpadruma*, 61 equivalent words of *Agni* have been ordered. These equivalent words help in making sense of the nature and elements of the *Agni*.^[6]

Nyaya and *Vaishesika Darshana* partitioned *Agni* into the following classes

- *Bhauma* or the actual fire,
- *Divya* or the divine fire like the easing up, beams of the sun, moon, and the stars,
- *Audarya* or the stomach fire which is liable for the processing as well as digestion and,
- *Akaraja* which is available in the metals like gold and silver. It has been displayed here that matter and energy are detachable just up to a specific level past which they are compatible and indistinguishable from one another.

Acharya Charak referenced that when the *Agni* of an individual is *sama*, then, at that point, that individual would be totally solid and would carry on with a long, cheerful, sound existence & when *Agni* of an individual is upset either vitiated or lessened, the entire digestion of the body would be upset, bringing about weakness and a sick state.^[1]

As per *Acharya Sushruta*, there could be no other type of *Agni* in the body with the exception of the *Pitta*, and when this *Pitta dosha* is vitiated or reduced the processing of the food material is impacted the same way as the ignition of fuel is impacted with lessened or vitiated fire in the external world.^[7]

Chakrapani has remarked on '*Pittantargatta*' that the capability of *Pitta* inside the body isn't ignition however its work is to give Intensity energy of *Agni*.^[3]

As per *Hemadri*, *Pitta* is of five divisions, which is situated in the *pakvashaya* and *amashaya*.^[2]

Place of *agni*

Grahani is the seat of *agni* and it is supposed since it holds/holds the nourishment for appropriate processing and osmosis. It holds the food simply over the umbilical district and it is upheld and fed by the *agni*.^[8]

Types of *agni*^[9,10,11,12,13]

| Sr. No | Author | Names | No. | Reference |
|--------|-------------------------|---|-------------------|---------------------|
| 1. | <i>Acharya Sushruta</i> | <i>Pachakagni</i> , <i>Ranjakagni</i> , <i>Sadhakagni</i> , <i>Bhrajakagni</i> , <i>Alochakagni</i> | 5 (<i>Agni</i>) | <i>Su.Su.21/10</i> |
| 2. | <i>Acharya Charaka</i> | <i>Jatharagni-1</i> , <i>Bhutagni-5</i> , | 13 | <i>Ch.Chi.15/38</i> |

| | | | | |
|----|-------------------------|---|-----------|------------------------------|
| | | <i>Dhatvagni-7</i> | | |
| 3. | <i>Sharangadhara</i> | <i>Pachaka, Ranjaka, Sadhaka, Bhrajaka, Alochaka</i> | 5 (Pitta) | <i>Sha.Sa.Pu.Kh.5/32</i> |
| 4. | <i>Bhavamishra</i> | Same as <i>Charaka</i> and <i>Vagbhata</i> | | <i>Bh.Pu.kh.3/169, 180</i> |
| 5. | <i>Acharya Vagbhata</i> | <i>Bhutagni-5, Dhatvagni-7, Doshagni-3, Malagni-3</i> | 18 | <i>As.hr.Sha.3/49, 56,59</i> |

Detailed study of *jatharagni*, *bhutagni* and *dhatvagni*

(1) *Jatharagni*

Jatharagni is the *Agni* or bioenergy present in the *Jathara* (stomach and duodenum). According to *Ashtanga Hridaya*, *Jatharagni*, the seat is *grahani* (duodenum), so called because it withholds the food for a certain time inside the *Amashaya* (stomach) to facilitate digestion. In the opinion of *Dhanvantari*, it is the *Kala* known as '*Pittadhara*' situated at the entrance of the *Pakvashaya* (intestine) and acting as a bolt to the door of the pathway/channel of food. It is responsible for the duration of life, health, valour, *ojas* (essence of the *dhatu*s), strength of all the *bhutagni* and *dhatvagni*. The strength of the *Grahani* is from *Agni* itself, and the strength of *Agni* is from *Grahani*. When the *Agni* undergoes vitiation, *Grahani* also gets vitiated and produces diseases. *Jatharagni* is considered to be the most important because each and every nutrient that one ingests first comes to the *Jathara* and is subjected to the action of *Jatharagni*. *Jatharagni* digests the food materials that consist of the five basic elements and transforms it for utilization by the respective *Dhatu*s *paramanus* (tissues). It is also responsible for separation of the food material into the essence portion (*Prasad*) and the waste products (*kitta*) in our body.^[14] *Jatharagni* is also classified into four categories according to its performance of digestion in the human being namely *Vishamagni*, *Tikshanagni*, *Mandagni* and *Samagni*.^[15]

Jatharagni is likewise grouped into four classes as indicated by *bala of agni*

a) *Samagni*

First variety is not associated with *dosha* and it is called *samagni* state and it is the physiological state of *agni*. The *Samagni* digests and assimilates food properly at the proper time. This thus increases the quality of the *Dhatu*s (supportive tissues of the body). Persons

having *Samagni* are always hale and healthy.

b) Vishamagni

Vishamagni is the state in which improper digestion and metabolism takes place i.e. sometimes performs normal functions followed by abnormal one and manifest flatulence, abdominal pain, upward movement of *vata* inside the *kostha*, diarrhoea, and heaviness in abdomen, intestinal gurgling and straining exercise for evacuation of stools. When this *Agni* is affected by the *Vata Dosha*, it creates different types of *vatavyadhi*.

c) Tikshnagni

Tikshnagni means very quick/very sharp/very fast. *Tikshnagni* is a state of very quick digestion of food, regardless of the type of food. *Acharya Sushrut* states that when the power of digestion is increased from normal to above normal, food digests very quickly and produces hunger or the desire for food. When food is digested, the throat, the mouth cavity and the lips become dry with a burning sensation. This condition is known as '*Bhasmak Roga*' according to *Ayurveda*. *Tikshnagni* state gives rise to manifestation of *vatavyadhi*.

d) Mandagni

'*Mand*' means slow. The meaning of the *Mandagni* is slow digestive power or digestive capacity. Those who are having *Mandagni* eat very little and are unable to digest the smallest amount of food. *Dhanvantri* says that *Agni* digests the least amount of food in the greatest amount of time and manifest heaviness in abdomen and head, cough, dyspnea, excessive salivation, vomiting and weakness of the body. *Mandagni* state gives rise to manifestation of *kaphaja vikara*.^[16-19]

(2) Bhutagni

Bhutagni is the one that is present in a basic element (*Bhutas*). There are five *Agnis* in each of the five basic elements, namely – *Parthiva* (earth), *Apya* (water), *Tejas* (Fire), *Vayavya* (Air) and *Nabhasa* (sky). Each and every cell in our body is composed of the five *mahabhutas* or five basic elements. Naturally, each cell (*dhatu paramanu*) consists of these five *Bhutagni* also. All the nutrients in this world that we eat also consist of the same five basic elements with their respective *Agni* or bioenergy. Thus, they are completely similar with respect to the five basic elements with their *Bhutagni* in our body cells as well in the entire outside nutrient that we ingest for the nutrition of our body. *Acharya Charak* has mentioned that the five *Bhutagni* digest their own part of the element present in the food materials. After the digestion

of food by the *Bhutagni*, digested materials containing the elements and qualities similar to each *bhutas* nourish their own specific *bhautika* elements of the body. These *Bhutagnis* act after the *Jatharagni* present in the stomach and duodenum, acting on the food and causing their disintegration. In the modern physiological perspective, the action of *Jatharagni* can be equated with the digestion in the stomach and duodenum, and the action of the *Bhutagni* can be equated with the conversion of digested materials in the liver.^[20]

| Sr. No. | Agni | Panchmahabhutas |
|---------|-----------------------|--------------------------------|
| 1. | <i>Nabhasa Agni</i> | <i>Aakash</i> |
| 2. | <i>Vayaveeya Agni</i> | <i>Vayu</i> |
| 3. | <i>Tejasa Agni</i> | <i>Agni</i> |
| 4. | <i>Aapya Agni</i> | <i>Jala</i> |
| 5. | <i>Parthiv Agni</i> | <i>Prithvi</i> ^[21] |

(3) *Dhatvagni*

All the seven *Dhatus* (seven element tissues of the body) contain their own *Agni* to metabolize the nutrient materials supplied to them through their own *Srotas*.

- a) *Rasagni* present in the *Rasa Dhatu*.
- b) *Raktagni* present in the *Rakta Dhatu*.
- c) *Mamsagni* present in the *Mamsa Dhatu*.
- d) *Medagni* present in the *Meda Dhatu*.
- e) *Asthyagni* present in the *Asthi Dhatu*.
- f) *Majjagni* present in the *Majja Dhatu*.
- g) *Shukragni* present in the *Shukra Dhatu*.

Each *Dhatvagni* or the bioenergy present in each *Dhatu* synthesizes and transforms the essential *Rasa Dhature* required for that particular *Dhatu* or cell from the basic nutrients present in the *Anna Rasa* or essence of the diet that we consume. Each *Dhatvagni* has got a speciality to synthesize and transform the constituents suitable to its particular *Dhatu*. This action is a sort of selective action. *Acharya Charaka* has mentioned the fact that the seven *dhatu*s that are a support of the body contain their own *Agni*, and by their own *Agni* they digest and transform the materials supplied to them to make the substances alike to them for assimilation and nourishment.^[20]

Importance of *jatharagni*

Functions of various *agni* elaborately discussed above in which *jatharagni* is the chief among all types of *agnis* because function of *bhutagni* and *dhatvagni* depends on this. Aggravation

or diminution of *jatharagni* results in aggravation or diminution of *bhutagni* and *dhatvagni*. Therefore by all means one has to protect *jatharagni* by consuming suitable wholesome dietetics and behaviour because longevity and strength depends on normal state of *agni*. On the contrary one, who consumes unwholesome diet due to greed, succumbs to disease caused by the vitiation of *grahani*.^[22]

Agni and Pitta

Pitta is the same as *Agni* since, it performs absorption, burning, and comparable activities performed by *Agni*. As per *Acharya Sushruta*, we can't find some other *agni* or shoot in the body other than *pitta*, since when there is expanded processing and burning in the body is expected to the *ushna guna* of *pitta* and the treatment resembles the *Agni*. *Acharya Chakrapani* has referenced that the capability of *pitta* inside the body isn't ignition, yet its work is to give intensity to *Agni*. *Acharya Sushruta* has portrayed the five kinds of *Agni* as an assortment of *pitta*. The *pachakagni* is otherwise called *Jatharagni*, *koshthagani*, *antaragni*, and *dehagni* in light of the fact that it processes the food and isolates the *sara* from the *kitta* segment, similar to the *Agni*. *Acharya Bhoja* is likewise viewed as the *pitta* as *Agni*.^[23,3]

Agni and Aama

Aama is only undesirable, indigested food. Deprived working of *Agni* drives heartburn and development of *aama* which is the main cause of different sicknesses. This *aama* is framed by the *Mandagni*. Due to *Mandagni* the undigested food particles start to get gathered in the body. As per *Madhav Nidana-Madhukosh Tika*, there are three *pakavasthas*, in the first *avastha* because of the shortcoming of *Jatharagni* *aama* getting collected in *Amashaya* (stomach). In the second *avastha* because of shortcomings of *dhatvagni* the *dhatu*s didn't get processed and frames *aama* which is otherwise called *aama-visha*. In the third *avastha* for the most part undigested food gets collected and prompts the arrangement of *aama*.^[24]

Physiological role of *agni*

Agni plays a vital role in regulating thermodynamic and chemodynamic activities in the body.

- ❖ In a normal state, it contributes to proper digestion, joy, happiness and the maintenance of normal bodily heat and complexion.
- ❖ *Agni* exhibit *Dahana* and *Pachana Karmas* and respond similarly to *Sheetala* and *Ushna*.
- ❖ *Agni* possesses *Sushka* and *Ruksha Guna* thus primarily maintains *Pakadi karmas*.
- ❖ *Agni* is responsible for the absorption of nutritious substances during the digestive process.

- ❖ In the absence of *Aahar*, it also addresses *Ama pachan* by effectively metabolizing improper metabolites.
- ❖ *Agni* plays a vital role in converting food into energy, which is essential for all vital functions in the body.
- ❖ It serves as the constant agent in the process of *Ahara paka*, overseeing metabolic transformations.

Role in metabolic transformation

Digestion and Metabolism are intricately connected processes crucial for the proper functioning of the body. Metabolism encompasses the chemical processes that occur within the body to transform food into energy. The process of Digestion initiates in the mouth with both mechanical and chemical breakdown of food. As food traverses the digestive system, it undergoes further breakdown and processing facilitated by digestive enzymes, bile, and stomach acid. Nutrients derived from the food are subsequently absorbed into the bloodstream, transported to various body parts, and utilized for energy, growth, and repair. Metabolism, on the other hand, constitutes a series of chemical reactions within cells to convert food into energy. These reactions involve breaking down carbohydrates, proteins, and fats to generate energy and synthesizing new molecules from these nutrients to support diverse bodily functions. *Agni* play vital role in these process which collectively referred to as *Awastha paka* categorized into three phases; *Amavstha (Madhuravastha) Paka*, *Pachymanavastha (Amlavstha) Paka* and *Pakavstha (Katuavstha) Paka*. *Amavstha Paka* occurs in the stomach. *Pachymanavastha Paka* takes place in the *Grahani*. *Pakavstha Paka* occurs in the small and large intestine. These phases represent the changing nature of *Rasa* during different stages of digestion. At the conclusion of digestion, the digested food retains its original *Rasa*, in alignment with the *Rasa* of the ingested food. The metabolic transform (*Vipaka*) of different *Rasa* differ from each other, *Madhur rasa* and *Lavan rasa* exhibit *Madhura Vipaka*, *Amla rasa* has *Amla vipaka* and *Katu & Kashaya rasa* showcase *Katu vipaka*. These metabolic transformations of ingested *Rasa* exhibited in final stage of digestion. The intricate processes of digestion and metabolism are overseen by *Agni*, this digestive fire which is vital for effective digestion, metabolism and the elimination of waste products from the body. *Jatharagni* is responsible for digestion while *Bhutagni* and *Dhatvagni* play important role in metabolism. *Bhutagni* is responsible for the metabolism of the five basic elements (*Bhutas*) constituting the body and the universe; earth, water, fire, air, and ether. It transforms these elements from ingested food into energy. *Dhatvagni*, on the other hand, oversees the

metabolism of the *Dhatus* including *Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja* and *Shukra*. *Dhatvagni* converts nutrients from food into the foundational components for these tissues.^[25,26,27,28]

Health and Agni

Maintaining the health of *Agni* is imperative for proper metabolism and overall well-being. Imbalances in these *Agnis* can lead to digestive issues, inadequate nutrient absorption, and an accumulation of toxins in the body, impacting metabolism and other bodily functions. *Ayurveda* provides diverse dietary and lifestyle recommendations to maintain healthy *Agni* including adhering to a balanced diet, engaging in regular physical activity and practicing stress-management techniques. Additionally, Ayurvedic herbs and treatments are utilized to support optimal digestion and metabolic function.^[27,28,29]

CONCLUSION

Agni plays a vital role in regulating thermodynamic and chemodynamic activities in the body. *Agni* is responsible for the absorption of nutritious substances. *Agni* plays a vital role in converting food into energy and it governs metabolic transformations inside the body. *Acharya Charaka* elucidates the digestive and metabolic functions of *Agni*, emphasizing that various dietary substances are processed by their respective *Agni*. This process is facilitated and augmented by *Jatharagni*, leading to further digestion and metabolism by *Dhatvagni*. The ultimate outcome is the nourishment of the body, contributing to its nutritional strength, complexion, and overall well-being. Simultaneously, this process imparts energy to the seven *Dhatus*, promoting a harmonious and contented life.

REFERENCES

1. Pt.Kashinathshastri and Dr. Gorakhanath chaturvedi, Charaka Samhita of Charaka with Vidyostini Hindi Commentary, Chikitsa sthana, Varanasi: Chaukhambha Bharati Academy, 2009; 15: 1-4.
2. Sharma RK, Das VB: Editor Caraka Samhita of Agnivesa, Chikitisa Sthan; Grahani Dosha Adhyaya: Varanasi: Chaukhamba Krishnadas Academy, Edition, 2009; 1(IV): 1-2, 15-3.
3. Pt.Kashinathshastri and Dr. Gorakhanath chaturvedi, Charaka Samhita of Charaka with Vidyostini Hindi Commentary, Sutrasthana, Varanasi: Chaukhambha Bharati Academy, 2009; 28: 150.
4. Byadgi PS: Ayurediya Vikriti Vigyan and Roga Vigyan, Chaukhambha Publications, New

- Delhi, 2009; 1: 1.
5. Upadhyaya Y: Editor, Astangahrdaya of Vagbhata, Sutra Sthan; Doshabhedeeya Adhyaya: Varanasi: Chaukhambha Prakashan, Ed, 2007; 12, 1: 90-91, 12-13.
 6. Shabdakalpadruma, Radhakantdev R, editors. Amar Publication Varanasi: Chaukhambha Samskrit Series, 1967; 8.
 7. Ambikadatt Shastri, Sushruta Samhita of Sushruta with Ayurveda Tatva Sandipika Hindi Commentary, Sharirasthana, Varanasi: Chaukhambha Sanskrit Sansthana, 2009; 21: 09.
 8. Pt.Kashinathshastri and Dr.Gorakhanath chaturvedi, Charaka Samhita of Charaka with Vidyostini Hindi Commentary, Chiktsasthana, Varanasi: Chaukhambha Bharati Academy, 2009; 15: 56.
 9. Ambikadatt Shastri, Sushruta Samhita of Sushruta with Ayurveda Tatva Sandipika Hindi Commentary, Sutrasthana, Varanasi: Chaukhambha Sanskrit Sansthana, 2009; 21: 10.
 10. Pt.Kashinathshastri and Dr.Gorakhanath chaturvedi, Charaka Samhita of Charaka with Vidyostini Hindi Commentary, Chiktsasthana, Varanasi: Chaukhambha Bharati Academy, 2009; 15: 38.
 11. Sharangdhar Samhita, Prof. K. R. Shrikant Murti, Chaukhambha Publication
 12. Misra B, Vaisya R: Editor, Bhavaprakasa of bhava Misra, Garbhprakashnam: Varanasi: chouxhambha Sanskrit Bhawan, Ed, 2010; 11(I), 3: 169-180.
 13. Ashtanga Hridaya of Vagbhata - Sarvanga Sundari Comm. Arunadatta, Edited by Pt. Hari Sadasiva satriparadakara, Chaukhambha Surbharati Prakashan Varanasi, Sharirasthana, 2014; 3, 4: 56-59.
 14. Upadhyaya Y: Editor, Astangahrdaya of Vagbhata, Sharir Sthan; Angvibhagsharir Adhyaya: Varanasi: Chaukhambha Prakashan, Ed, 2007; 1: 189, 3-61.
 15. Sharma RK, Das VB: Editor, Caraka Samhita of Agnivesa, Chikitisa Sthan; Grahani Dosha Adhyaya: Varanasi: Chaukhambha Krishnadas Academy, 2009; IV, 15, 1: 27, 50-51.
 16. Sharma RK, Das VB: Editor, Caraka Samhita of Agnivesa, Chikitisa Sthan; Grahani Dosha Adhyaya: Varanasi: Chaukhambha Krishnadas Academy, 2009; 15, IV: 27, 50-51.
 17. Byadgi PS: Ayurvediya Vikrti Vigyan & Roga Vigyan, Chaukhambha Publications, New Delhi, 2009; 1(I): 76-77.
 18. Sharma PV: Editor, Sushruta Samhita of Dalhana, Sutrasthana; Aturupkramneeya Adhyaya:, Varanasi: Chaukhambha Vishvabharati, Oriental Publishers and Distributors, 2010; 35, 1(I): 334-335, 24-25.
 19. Upadhyaya Y: Editor, Astangahrdaya of Vagbhata, Sharir Sthan; Angvibhagsharir Adhyaya: Varanasi: Chaukhambha Prakashan, Ed, 2007; 3, 76, 1: 191-192.

20. Sharma RK, Das VB: Editor, Charaka Samhita of Agnivesa, Chikitsa Sthan; Grahani Dosha Adhyaya: Varanasi: Chaukhamba Krishnadas Academy, 2009; IV, 15, 13, 14: 9-10.
21. Pt.Kashinathshastri and Dr.Gorakhanath chaturvedi, Charaka Samhita of Charaka with Vidyostini Hindi Commentary, Chikitsasthana, Varanasi: Chaukhambha Bharati Academy, 2009; 15: 13-14.
22. Byadgi PS: Ayurvediya Vikrti Vigyan & Roga Vigyan, Chaukhambha Publications, New Delhi, 2009; 1(I): 74.
23. Chakrapani Tika on Charaka Samhita of Agnivesa by Cakrapanidatta. Varanasi: Chaukhamba vidya bhawan, 2008; 80.
24. Madhav Nidana Madhukosh Vyakhya by Ayurveda Acharya sh. Sudershan Shastri Utrardh ChaukhambhaSanskrit sansthan, Edition Fifth, 136.
25. Srivastava S: Editor, Sharngadhar Samhita of Acharya Sharngadhar, Purva Khand; Kaladikakhyanam: Varanasi: Chaukhambha Orientalia, Ed, 2005; 5, 1: 41-42, 30-32.
26. Sharma RK, Das VB: Editor, Charaka Samhita of Agnivesa, Chikitsa Sthan; Grahani Dosha Adhyaya: Varanasi: Chaukhamba Krishnadas Academy, Ed, 2009; IV, 15, 1: 22-23, 39-40.
27. Charaka Samhita Chikitsa sthan, Dr. Brahmanand Tripathi, Chaukhamba Surbharati prakashan, Varanasi, 2006; 15-51.
28. Kaviraj Dr. Ambikadattashastri, Sushruta Samhita Sutra Sthan, Chaukhambha Sanskrit SansthanVaranasi, 2007; 21-5.
29. Charaka Samhita Sutra sthan, Dr. Brahmanand Tripathi, Chaukhamba Surbharati prakashan, Varanasi, 2006; 28-15.