

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH

SJIF Impact Factor 8.084

Volume 11, Issue 14, 176-189.

Review Article

ISSN 2277- 7105

A CONCEPTUAL STUDY OF STHAULYA AND ITS CORRELATION WITH JATHRAGNI – A LITERARY REVIEW

Dr. Sumit, PG Scholar* and Prof. Dr. M. B. Gaur, HOD

PG Department of Kriya Sharir, Ch. Brahm Prakash Ayurved Charak Sansthan, Khera Dabar, New Delhi, India.

Article Received on 26 August 2022,

Revised on 15 Sept. 2022, Accepted on 05 Oct. 2022

DOI: 10.20959/wjpr202214-25840

*Corresponding Author Dr. Sumit

PG Scholar, PG Department of Kriya Sharir, Ch. Brahm Prakash Ayurved Charak Sansthan, Khera Dabar, New Delhi, India.

ABSTRACT

Sthaulya is the most frequent and earliest known metabolic condition in humans. There is an alarming increase in the number of cases of sthaulya over the globe. Sthaulya may be linked to obesity in western medicine. As far back as 1500 B C, Acharya charaka referred to it as medoroga, which translates to "adipose tissue afflictions." In ayurveda, descriptions of sthaulya are scattered in different ayurvedic classics, but in *charak Samhita* special attention is given to this disease. *Agni* in Ayurveda is defined as the entity which is responsible for all digesting, absorbing and assimilation of ingested food, which is inexorable for the maintenance of life in the human beings. Normal condition of agni is responsible for strength, health, longevity and vital breath. ^[6]

Impaired Agni is the root of all imbalances and diseases and, an intensified state of agni is found in sthool individuals. Classically published review of sthaulya through the discernment of conventional territory like Charak Samhita, Sushrut Samhita with the existing commentaries and correlation with contemporary knowledge was done. The ayurvedic concept of this information on the subject regarding classification, characteristics features have been made in this paper. The aim and objective of this paper is to review the known concept of the Ayurveda about sthaulya and its preventive & supportive management and assessment of agnibala in sthaulya.

KEYWORDS: Sthaulya, obesity, medoroga, adipose tissue, medovaha srotos, jatharagni dhatvagnis, medogni, bhutagnis.

INTRODUCTION

Humans are the most intelligent animate being on the earth. Through his infinite intelligence, he has produced advance technology which augmented for sophisticated life and is successful in containing many diseases. Among these circumstances, men forget the law of nature. Here we would like to say about diet & dietary rules. Forgotten of these important things, man diverted to mother of all diseases means obesity. The oldest and most common metabolic disorder of human is obesity. It may be defined as an abnormal growth of the adipose tissue due to an enlargement of fat cell size (hypertrophic obesity) or an increase in fat cell number (hyperplastic obesity) or a combination of both. In *ayurveda*, *acharya charaka* described it under *medoroga* called *sthaulya*. It is defined as owing to an excessive increase of fat and muscle tissue, the buttock, abdomen, and breast become pendulous and his strength is rendered disproportionate with his physical growth.^[1]

In contemporary science, Obesity can be quantified using the body mass index [BMI = weight in kilograms divided by the height in metres squared (kg/m2)].

Quantifying obesity with body mass index (weight/height²)^[2]

BMI (kg/m²)	Classification*	Risk of obesity comorbidity
18.5-24.9	Normal range	Negligible
25.0-29.9	Overweight	Mildly increased
> 30.0	Obese	Moderate Severe Very severe
30.0-34.9	Class I	
35.0-39.9	Class II	
> 40.0	Class III	

According to WHO overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. Worldwide, overweight and obesity cause more deaths than underweight. Worldwide at least 2.8 million people die each year as a result of being overweight or obese, and an estimated 35.8 million (2.3%) of global DALYs (disability-adjusted life year) are caused by overweight or obesity according to WHO statistics. This is also an emerging health problem in India. 22 million Indians are obese, especially abdominally obese.

Changes in calorie intake and expenditure are at the root of this noncontagious epidemic. Average daily dietary energy intake per person raised from 2350 kcal in the 1960s to 2800 in the 1990s, according to estimates.^[3] This is especially true when it comes to sugary beverages

and high-fat foods. Occurrences of obesity have been linked to a decrease in physical activity as well as an increase in time spent in front of the watching television.^[4]

Agni in ayurveda, is reflected in the concept of pitta. Agni is defined as the entity which is responsible for all digestive and metabolic processes in the human beings. Power of agni or normal condition of agni is responsible for strength, health, longevity and vital breath. One lives long, free from disorders if the agni is functioning properly (yukte chiram jivayati anamayah). Indeed, according to ayurveda, when agni is extinguished, death soon follows. Impaired Agni is the root of all imbalances and diseases. There are 13 types of agni in our body (1 jatharagni, 7 dhatvagni, 5 bhutagni), and jatharagni is considered to be the root or chief among all these categories of agni in charka samhita; it is stated that, an intensified state of agni is found in sthool individuals. So, this particular review article will focus on assessment of agnibala in sthaulya, the known concept of the Ayurveda about sthaulya and its preventive & supportive management.

Correlation of sthaulya and agnibala

Most of the *acharya* have described bad prognosis of the *sthaulya*. *Acharya charaka* has designated the *sthula purusha* as a *ninditapurusha*. There are eight doshas (defects) inherent in them – shortening of lifespan, hampered movement, difficulty in sexual intercourse, debility, foul smell, over sweating, too much hunger and excessive thirst. ^[8] *Kapha, meda, ama,* and *agni* are the main components, whose derangements is responsible for *sthaulya*. In this disease *jatharagni* is found to be in hypofunctional state. Depression of *medodhatvagni* is caused by aggravated *kapha* and *madhur rasa*. *Ama* results in *apakva meda*, which ultimately leads to manifestation of *sthaulya*. Here one of the points to be noted that *mandagni* and *tikshnagni* are seen in the *samprapti* of *sthaulya* but the condition of *mandagni* is primary, while *tikshnagni* occurs in later stage. Here, *jatharagni* is found in excessive condition whereas *medodhatvagni* is found in *manda* condition. It is due to *avarana* of *vayu* in *kostha*.

AIMS AND OBJECTIVES

To highlight the concepts of *agni* and *sthaulya* along with classification, characteristics features, complication, prognosis, have been made in this paper.

MATERIAL AND METHODS

This review article highlights the wisdom of ancient Indian literature and some historical view of the sthaulya and agnibala elucidated by the acharyas. The appropriate websites and journals providing evidence regarding the obesity will also be reviewed.

HISTORY

Each time of this world has its own history. In this context we would like to know the history of sthaulya from veda to till now. We divided this period from veda till now into four stages like.

- 1. Vaidic kala In rigveda meda & vapa are mentioned and appreciated exercise and hard works in context of health. In yajurveda, a disease named upachita just like sthaulya is mentioned. The words medina, meda, pivasi are used as synonyms in atharvaveda. Sthulani is mentioned in swetaswatar upanishada.
- 2. Samhita kala The golden era of ayurvedic history sthaulya has been classified under astaunindita purusha in charak samhita. Its causative factors, mainly exogenous and hereditary component bijado shabhagavayava along with its pathology, sign & symptoms, prognosis & management have been narrated in detail. Sushrut has narrated the etiopathogenesis of sthaulya on the basis of an endogenous entity, elaboration of line of treatment & various remedies in the form of yoga & lepa are described for its management at different places.
- 3. Samgraha kala Acharya Vriddha Vagabhatta & Vagabhatta has elaborated the etiopathogenesis of sthaulya on the basis of ama & dysfunction of the process of dhatu parinaman. Sthaulya is counted as a disorder of shleshma dosha seated in medo dhatu in ashtang sangraha.
- **4.** Adhunika kala This is from 19th century till date. In this period the systemic & scientific study of various diseases including obesity has been illustrated in so many texts. Some ayurvedic texts references & modern historical review is presented here. In bhaishajya ratnawali the treatment of medoroga & full detail of pathyapathya is mentioned in medoroga chikitsa prakarana in 39th chapter. In rastantra sar samgraha all the compound preparations used in obesity are compiled.

LITERATURE REVIEW

Nidan: - All the nidana (causative factors) mentioned in ayurvedic classics can also be classified into 4 groups. [9]

- Aharatmaka Nidana
- Viharatmaka Nidana
- Manas Nidana
- Anya Nidana

$Purvarupa^{[10,11]}$

Purvarupa of sthaulya has not been mentioned by any Acharya. But as per the direction given in vata vyadhi & urakshata chikitsa chapter the initial manifestation of sthaulya related symptoms can be considered as premonitory symptoms as follows. Charaka has described the symptoms of medovaha srotodusti as purvarupa of prameha which can be considered as purvarupa of sthaulya; because bahu & abaddha meda are the two components vitiated in pathogenesis of prameha as well as sthaulya. the symptoms of medovahasrotodushti like atinidra, tandra, alasya etc. are also signs of sthaulya. hence, initial stage of these signs & symptoms can be considered as a purvarupa of sthaulya. In modern science premonitory symptoms of obesity have not been described so overweight & its related initial or mild symptoms can be taken premonitory symptoms.

Rupa

The inordinate increase of fat & flesh is disfigured by pendulous buttocks, abdomen & breast and that increased bulk reduces the corresponding increase in energy. So, the person has less enthusiasm in his physical activity. Besides these, cardinal symptoms & disabilities of *sthaulya* are.^[12]

- 1. Ayushohrasa (Diminution of life span)
- 2. Javoparodha (Lack of enthusiasm)
- 3. *Krichhra Vyavaya* (Difficulty in sexual act)
- 4. Daurbalya (General debility)
- 5. Daurgandhya (Foul smelling of body)
- 6. Swedabadha (Distressful sweating)
- 7. *Kshudhatimatra* (Excessive hunger)
- 8. Pipasatiyoya (Excessive thirst)

Classification: - No clear-cut classification of *sthaulya* is found in the *ayurvedic* classics. *acharya vagbhatta* in *ashtanga hridaya* describing "langhanaupakrama", graded *sthaulya* as^[13]

1. Hinastshaulya 2. Madhyamsthaulya 3. Adhikasthaulya

Samprapti^[14,15,16,17,18,19]

- Acharya charaka has counted sthaulya under kapha nanatmaka vyadhi.
- Others also considered as *Kaphaja Vyadhi*.
- According to Sushruta excessive intake of madhur, amla, snigdha, guru, picchila and abhishyandi ahara and vihara like diwaswapna, avyayama leads to vitiation of kapha.
- Physiochemical properties of *meda* and *kapha* are same. So, it may be evident that vitiation of *kapha* causes provocation of the process of *meda sanchaya*. Because most of *sthaulya* symptoms are similar to *kapha vriddhi*, the vitiated *kapha* with *ama* creates *medovaha srotosanga* which leads to *vimarga* gamana of *vayu* specially *samana* and *vyana vayu*.

> Pitta

• Though obese persons have very few *pittaja lakshanas* but most obese persons have *tikshnagni*. If we look into the symptoms of *sthaulya- atikshudha*, *atipipasa*, *swedadhikya*, *daurgandhya* have been ascribed in *pitta vyadhi lakshana*.

> Vata

• *Vata* generate two pathogenic conditions in *sthaulya*. First when the *srotas* being obstructed by fat, the *vata* moves into stomach, stimulates *jatharagni* which increases the appetite, digests the food and absorbs the nutrients. second inactiveness of *vyana vayu* is responsible for improper circulation and distribution of *dhatu*. Because of *sanga* in *medovaha srotas* the nutrients cannot be carried by *vyana vayu* to their respective *dhatu* and again excess intake of *medo poshaka ahara*, *meda vriddhi* postulated with the evidence of *agni samdhukshana* and improper distribution of fat in the body proves the involvement of *vyana vayu*.

(2) Dushya

The disease process is not possible without *dosha dushya sammurchana*. *sthaulya* is a *dushya pradhan vyadhi* and we can clearly see the excessive production of *meda dhatu*. Here *rasa*, *mamsa*, *meda*, *majja* and *shukra dhatu* are *dushya*, as *kapha* is seated in. On the basis of *ashraya-ashrayee bhava* vitiation of *kapha* also lead to vitiation of *saumya dushya*. Moreover, in *sthaulya* excessive nourishment of *medodhatu* in presence *tikshna jatharagni*, produces excessive *poshaka annarasa* which has *madhura*, *snigdha guna*. Due to this

excessive production of *dhatu poshakansha*, particular *dhatu* is increased in quantity and quality.

(3) Srotas

• *Srotas* are the micro channels of the body which carry the nutrients after metabolic transformation into respective *dhatu*. The *srotodusti lakshana* and *dushya dushti lakshana* are same.

The *srotas* carrying the fat forming element get vitiated in consequences of lack of exercise, sleeping in daytime, excessive consumption of fatty diet and over indulgence in *varuni* madya.

Meda dhatu is produced due to intake of specific type of diet. That meda vridhhi creates sanga in medovaha srotas and margavarodha vitiate the vata. Due to that avrita vata the dhatu poshakamsa cannot reach to the respective dhatu and over production of meda takes place.

(4) Agni

- Sharir Agni has been classified as. (a) Jatharagni (b) Bhutagni (c) Dhatvagni
- (a) *Jatharagni*: Hyperactive stage of *jatharagni* is present in *sthula* person. That's why he easily digests even very heavy meal in a very short time period and has voracious hunger all the time. Due to *tikshnagni*, over production of *anna rasa* take place which lead to *sthaulya*.
- (b) *Bhutagni*: *Bhutagni* makes the ingested food homogenous to body. It takes place in *adhoamashaya*, which may be *yakrit* which plays a great role in function of *bhutagni paka*. The process of *bhutagni paka* is not limited to gastrointestinal tract, but it extends up to the *dhatu* level also. In *sthaulya*, *meda* is consisting of *prithvi* and *jala mahabhuta*. The ingested food with predominance of *prithvi* and *jala* causes over growth of *meda* that led to *sthaulya*.

(c) Dhatvagni w.s.r. to Medasagni

The term *dhatu* stands for support and *poshan* or to nourish. The term *agni* stands for *pitta*, the *ushma* inside our body. So, the term *dhatvagni* refers to *agni* which is situated in *dhatu* and takes part in metabolic transformation of nutrient substances.

The seven kinds of *dhatvagni* corresponding to the seven species of *sharir dhatu*. Each one of the seven *agni* are responsible for bringing about the transformation of appropriate nutrient

substances present in ahara rasa into corresponding poshaka or asthayi dhatu or precursor dhatu. So, the same is built up as part concerned poshya or sthayi dhatu.

Dhatvagni Paka

After avasthapaka, the upadana rasa absorbed from the adhomashaya which in potential form, are the elements which are *vijatiya* to the body. So, they must be converted to *sajatiya*. this transformation or conversion is called paka which is brought about by specific kind of ushma, associated with specific dhatu. The term dhatu ushma stands for agni concerned with the formation of dhatu known as dhatvagni. i.e. the ushma present in dhatu is a part of jatharagni and is controlled by it, known as dhatvagni. Hypofunction (manda) of specific versa. In the state of agnimandya, kshaya of further dhatu take place. In sthaulya due to hypofunction of medadhatvagni, meda poshaka dhatu cannot transform into further dhatu and also the hyperfunction of jatharagni causes accumulation of more medodhatu in dependent part of the body in the form of *sthayi dhatu* but in *malarupa* due to excess *vriddhi*.

Samprapti Ghataka of Sthaulya^[20,21,22,23]

Dosha: Kapha- Kledaka, Pitta - Pachaka, Vata - Samana, Vyana

Dushya: Rasa, Meda

Srotas: Especially Medovaha, Rasavaha

Srotodusti: Sanga, Vimargagaman

Agni: Initially agnimandya, Later teekhnagni

Adhisthana: Complete body, Sphika, Udara, Stana, especially Vapavahan and Medodhara

Kala. Udbhava Sthana: Aamashaya

Vyaktisthana: Sarvanga, specially Sphika, Udara, Shtana

Rogamarga: Bahya Prasara: Rasayani

Ama: Jatharagnimandya janit ama, Dhatvagnimandya janit ama

Svabhava: Chirkaaleen

Upadrava

It is a state which manifests in the later period of a disease, in which dosha are situated in gambhir dhatu. It is due to negligence and continued practice of unwholesome regimen. Charaka narrated those two complicating elements, agni and vata, are the special workers of the havoc, regarding to chronic consistence of sthaulya. They burn up the obese as the forest fire burns up the forest. [24] Kala vyatikrama has been explained as later stage of life by

gangadhara. Prameha is the most frequent complication of sthaulya due to similarity of nidana and dosha-dushya. Moreover, bahu and abaddha meda are mentioned as main pathological factors for genesis of prameha.

According to Sushruta, prameha pidika, visarpa, vidradhi, upadrava may result due to vitiation of meda specially badha meda. Because of sthanasamshraya of the three dosha & rakta in medodhatu, granthi, apachi, alji, galganda are appeared.

Because of *swedabadha* and ignorance of personal hygiene, *bahya krimi* can affect, so *Jantavah* (parasitic disease) (B.P. & Y.R) has been mentioned as *upadrava* of *sthaulya*. Occurrence of *kustha* by *bahya krimi* is well known. Hence *jantavah* & *kustha* like complications may take place due to *swedabadha* & vitiated *meda*. *Meda* is described as seat of *medogata kustha* & *krichha sadhya shvitra. prana vikriti*- obese persons are more susceptible of *swasa, kasa, sanyasa* like *updrava* due to *prana vikriti* (low immunity).

According to contemporary science, health consequences of obesity include: •Metabolic syndrome • Non-alcoholic steatohepatitis. • Cirrhosis. • Sleep apnoea. • Osteoarthritis. • Psychosocial disadvantage. Obesity has adverse effects on both mortality and morbidity; life expectancy is reduced by 13 years amongst obese smokers.

Prognosis^[25]

As per the criteria about the knowledge of *sadhyasadhyata*, *sthaulya* is *krichha sadhya vyadhi*. *charaka* has described the bad prognosis of *sthaulya* as means if an obese person is not duly managed, he is prone to death due to excessive hunger, thirst and complications.

- > Sukha Sadhya: Jatotara Hina Sthaulya having duration 1 to 5 years without any complications or secondary disease can be considered as sadhya.
- ➤ Kriccha Sadhya: Jatotara Madhyama Sthaulya having duration of 5 to 10 years with least complications but without secondary disease can be considered as Krichha sadhya.
- Asadhya: Sahaja Sthaulya is Asadhya. Jatotara Adhika Sthaulya having duration of more than 10 years in presence of complication & secondary disease can be considered as asadhya.

STHAULYA CHIKITSA^[26,27,28]

The process by which disturbed *dhatu* of the body gets balanced is termed as *chikitsa*. In *sthaulya*, increased *medo dhatu* & *kapha* creates disturbance in rest of *dhatu* & *dosha*. This

imbalanced state is the main contributory factor for the genesis of *sthaulya*. The general measures put forth to combat *dhatu vaishamya* is to avoid/give up *vishama hetu* & to acknowledge the *sama hetu*.

- Our great *Acharya* has maintained mainly three basic treatment principle as *vyadhi* pratikara sutra for all type of *vyadhi* which is applicable for sthaulya also as below.
- (1) Samshodhan / Apkarshan
- (2) Samshaman / Prakritivighata
- (3) Nidan Parivarjan

DISCUSSION

The origin and depletion of the seven *dhatus* are interconnected. To avoid the condition of *sthaulya*, it is therefore mandatory to keep all the *dhatus* in optimum quantity by taking adequate diet, and not just concentrating on the constituents affecting the quantity of *meda dhatu*. The children of obese parents are more prone to develop overweight in future. They must therefore be frequently monitored for the estimation of obesity and a special care to be taken while preparing their diet chart. *Yoga* and *pranayam* keep a control on obesity by burning excess fat, improving circulation, promoting sweating, clearing obstruction of many channels, affecting endocrinal secretions and increasing lung capacity. Introduction of *pathya aahar-vihar*, *langhan dravyas* and other *dravyas* and *yoga* mentioned should be done keeping the *prakriti* of the person and *yukti* of administration into consideration. Accepting a new schedule and rejecting non-essential ones must be done in *padanshik* manner. One should be conscious of not developing the risk factors of obesity like diabetes, hypertension, etc. including depression. Obesity being a lifestyle disorder can be easily conquered if fought with strong determination and patience.

The cause of obesity as described in modern science can be described as follows. The number of fat cells remains the same until death. Their number is more in obese person than a lean person. Once an obese person becomes thin, then the number of fat cells remains the same and they just become empty. These empty fat cells create an urge to the obese person to eat more so as to fill these fat cells. Repeated overeating beyond satiety for long duration results in setting a stage when the person does not receive satisfaction in normal amount of food resulting in overeating, and hence obesity. A home where the dinner table is always laden with eatables may also influence obesity. Thus, home environment matters a lot. For a

depressed and socially isolated person, food may act like a sedative and soon he becomes a prey to obesity. A decrease in BMR may result in increase in weight. This may happen due to many reasons such as hormonal imbalances or lack of exercises.

Samprapti of sthaulya can be divided in two categories.

- 1. This is according to *charaka samhita* in which there is just increased *jatharagni* which causes maximum ingestion and leads to maximum absorption of prithvi and jala mahabhuta dominant factors in the body leading to increased *medodhatu* in the body.
- 2. This is according to dalhana in which there is a state of medodhatvagni mandya which leads to excessive formation of improper *medodhatu* leading to *sthaulya*.

Here, jatharagni is found in excessive condition whereas medodhatvagni is found in manda condition. It is due to avarana of vayu in kostha. So, person indulges more in food, which produce excessive *meda* and vitiated cycle go on. This cycle is broken (*samprapti vighatana*) by katu rasa & ushna-virya pradhana drugs like vacha churna which decreases meda by its lekhana, shoshana and kaphanashaka properties, kaphanashaka properties due to agni and vayu mahabhuta dominance in them.

In pathogenesis of sthaulya vitiation of vata due to obstruction of meda and acuteness of agni in koshtha are main factors for atikshudha and sthaulya. sthaulya is a disease occurring due to tikshnagni.

Guru and apatarpana drugs are considered as the best for its management. Hence, safe alternate Ayurvedic anorexiant can play a definite role in the management of medoroga. Some anorexiant drugs are described in *charaka samhita* describing the time of treatment for bhasmaka disorder.

Treatment of obesity is difficult and patients need motivation. Psychological understanding and behavioural advice are essential weapons and dieting alone will not help one to reduce weight, exercise is also essential.

Causes of vitiation of agni

- ❖ Dietetic Indiscretions Excessive fasting, over eating, irregular eating, heavy, cold, dry, putrid food, dehydrated, excess liquid intake.
- ❖ Dietetic Incompatibilities Diet not compatible to habitat, climate, body constitution, digestive capacity, quantity, combination etc.

- ❖ Improper Administration of *shodhana* Therapies esp. *vamana*, *virechana*, *basti*, *snehana*.
- Suppression of manifested natural urges.
- Sedentary lifestyle (Lack of physical activity).
- ❖ Incompatible Activities Exercise after *snigdha* (unctuous) diet, exercise or sexual indulgence during indigestion.
- Unhygienic conditions and emaciation as a result of chronic disease affliction.
- ❖ Psychological factors Mental tensions, emotional instabilities like anger, fear, anxiety, lust, greed, jealousy, depression etc.

CONCLUSION

- ❖ Obesity is one of the *santarapanajanya vyadhi*, originated as a result of deteriorated life style which includes daily sedentary routine and junk food habits. Obese persons are considered one among the *astha-nindita purushas*.
- ❖ Sthaulya is a metabolic syndrome and it is dushya dominant vyadhi, comparable with obesity.
- ❖ In *ayurveda* it is believed that all the diseases or pathology occurs mainly due to impairment of *agni*, as entire digestive and metabolic activity is governed by *agni*. Hence all the efforts of a physician should be to maintain the *agni* in the optimum form. It is often addressed to be the essence of all the therapeutic interventions.
- ❖ The treatment of obesity includes six steps as patient counselling, behaviour modification, dietary management, exercise therapy, pharmacotherapy and surgical treatment.
- ❖ Film & fashion industries are now giving emphasise on slim-trim body. So numerous high-profile persons are forced to reduce weight.

REFERENCES

- 1. Sharma P.V.; editor; Charaka Samhita, Vol-1, Varanasi Chaukhambha Orientalia, reprint 2011, page-144.
- 2. Livingstone Churchill.; 21ST edition; Davidson's Essentials of Medicine, Elsevier, page-118.
- 3. Livingstone Churchill.; 21ST edition; Davidson's Essentials of Medicine, Elsevier, page-117.
- 4. Livingstone Churchill.; 2nd edition; Davidson's Essentials of Medicine, Elsevier, page-423.

- 5. Pandey K, Chaturvedi G, eds. Grahani dosha chikitsa, Charaka Samhita Varanasi, India: Chaukhambha Bharati Academy; 2015:452.Reprint.
- 6. Pandey K, Chaturvedi G, eds. Grahani dosha chikitsa, Charaka Samhita Varanasi, India: Chaukhambha Bharati Academy; 2015:452.Reprint.
- 7. Sharma P.V.; editor; Charaka Samhita, Vol-1, Varanasi Chaukhambha Orientalia, reprint 2011, page-144.
- 8. Sharma P.V.; editor; Charaka Samhita, Vol-1, Varanasi Chaukhambha Orientalia, reprint 2011, page-144.
- 9. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Sutra Sthana 11/45, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 234.
- 10. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Nidan Sthana
- 11. 1/8, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 604.
- 12. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Sutra Sthana 28/15, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 572.
- 13. Tripathi Brahmanand.; editor; Ashtanga Hridayam, Delhi Chaukhambha Sanskrit Pratisthan, page 192
- 14. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Sutra Sthana 21/5-6, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 411.
- 15. Shastri A D, Ayurveda Tattva Sandipika Hindi Commentary, Sushrut Samhita vol. 1, Sutra Sthana – 15/37, Edition – 2011, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 81.
- 16. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Sutra Sthana 20/17, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 404.
- 17. Shastri A D, Ayurveda Tattva Sandipika Hindi Commentary, Sushrut Samhita vol. 1, Sutra Sthana 21/23, Edition 2011, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 118.
- 18. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Viman Sthana
- 19. 5/8, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 711.
- 20. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Viman Sthana
- 21. 5/16, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 713.
- 22. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-2, Chikitsa Sthana 8/39, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 283.
- 23. Gupt A D, Vidyotini Hindi Commentary, Astang Hridaya, Sutra Sthana 11/34, Edition 2009, Chaukhamba Prakashan, Varanasi, Page no. 118.

- 24. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Sutra Sthana 21/5-6, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 411.
- 25. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Sutra Sthana 7/174, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 274.
- 26. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-1, Sutra Sthana 21/8, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 411.
- 27. Shastri S N, Vidyotini Hindi Commentary, Charak Samhita vol.-2, Chikitsa Sthana 6/57, Edition 2008, Chaukhamba Sanskrit Sansthan, Varanasi, Page no. 244.
- 28. Gupt A D, Vidyotini Hindi Commentary, Astang Hridaya, Sharir Sthana 5/12, Edition 2009, Chaukhamba Prakashan, Varanasi, Page no. 274.