

A Comparative Study of Efficacy of *Himanshwadi Churns* with or without *Takradhara* in the Management of *Vataj Grahani* w.s.r. Irritable Bowel Syndrome

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Abstract

Introduction: *Grahani* is very common disease in society. In present era factors like stressful life, faulty and irregular habit of food intake, lack of time for food intake and deification result in dysfunction of digestive system. It becomes weak causing *Garahani roga; Pravahika, Visuchika, Aalsaka* which are similar to Irritable bowel syndrome, inflammatory bowel syndrome, ulcerative colitis and chron'z disease mentioned in modern medicine. Most of the symptoms of Irritable Bowel Syndrome are enumerated in the conditions of *Vataj Grahani* delineated in Ayurvedic Classics. *Himashwadi Churna* is mentioned in Bhaishajya Ratnawali for *Grahani Chikitsa*¹.

Aim: To clinically evaluate the efficacy of *Himanshwadi churna* with or without *Takradhara* on *Vataj Grahani*(I.B.S.)

Materials and Methods: In this present clinical study, total 60 patients of *Grahani Roga* were registered and randomly divided into two groups. In A group *Himanshwadi churna* was given and Group B was given *Himanshwadi churna* with *Takradhara* therapy for 4 weeks. A clinical research performa was specially designed on the basis of the study drugs.

Results:

Excellent results in group A [70-80%] and in group B (70-95%) were found in symptoms like abdominal pain and abdominal discomfort. Both group showed good results [average 50-70%] were found in symptoms like *Adhmanam, Shwas, Aasyavairasya, Grudhi Sarva Rasanam*, alteration of bowel habit, *Shushka, Tanu, Apakvam, Fenvat Malpravrutti* and average results (25-50%) was found in *Manasadanam, Karnaswana, Kruchapaka*. Average percent relief in Group A and in Group B was found to be 61.47% and 74.13%, respectively. Therefore, it is more efficacious than group A as per average percent relief.

Conclusion: Statistically significant improvement was observed in all the symptoms in both the groups. While in comparison Group A showed better effect than Group B. It is concluded that *Himanshwadi churna* with *Takradhara* can be used as rather than without *Takradhara Vataj Grahani* (I.B.S.)

Keywords

Grahani, Himanshwadi Churna, Takradhara, Irritable Bowel Syndrome



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INTRODUCTION

Gastrointestinal ailments cause a heavy economic burden on National Health Service. In our Ayurved science *Grahani* is an organ of GIT and *Adhishthana* of *Agni* (*Jatharagni*). The term —*Grahani Dosha* implies the malfunctioning of *Agni*. *Agni* is primarily located in *Grahani* (duodenum including upper part of small intestine). It receives the food (i.e., *Grahan*), retains the food (i.e., *Dharana*), till *Pachana* of *Ahara* (i.e., digestion). *Grahani Dushti* lead to conditions like *Aruchi*, *Praseka*, *Ajeerna* to *Alasaka* and life threatening toxic states like *Visuchika*. Functionally weak *Agni* i.e., *Mandagni* causes improper digestion of ingested food which leads to *Grahani Dosha*, and finally if not treated timely then *Grahani Roga* ensues, which is preliminary stage of *Grahani Roga*²⁻³.

"*Grahani Dosha*" is the leading disorder of the gastrointestinal tract. As the hypofunction of *Agni* i.e., *Mandagni* is the root cause of all the disease, *Grahani Dosha* is also mainly caused by *Agnidushti*. The main site of *Agni* and the disease-*Grahani Dosha* is the organ—*Grahani*, and considering no difference between *Ashraya* (shelter) and *Ashrita* (dependent), the

malfunctioning mainly lies in the organ - *Grahani*, is called *Grahani Dosha*. The impairment of *Agni* is responsible for the creation and causation of *Grahani Dosha*, as the *Agni* is primarily located in the *Grahani* (duodenum including the upper part of small intestine). Thus *Agni Dosha* (malfunctioning of enzymes responsible for digestion) is implied by the term *Grahani Dosha*⁴. Functionally weak *Agni* i.e., *Mandagni* causes improper digestion of ingested food, which moves either in *Urdhva* or *Adha - Marga*; when it goes in *Adho-Marga*, then it leads to *Grahani Gada* i.e. *Grahani Dosha*⁵. *Acharya* Charaka has described the *Samprapti* of *Grahani Roga*, step by step, which includes:

**ETIOLOGICAL FACTORS → AGNI
DUSTI → APACHANA → AMA
UTPATTI → SHUKTA-PAKA →
ANNAVISHA OR AMAVISHA →
GRAHANI
DOSHA → GRAHANI ROGA.**⁶

The disease *Grahani* is the leading disorder of the digestive system. Due to various etiological factors of *Grahani Roga*. The *Grahani* becomes impaired as a result of *Dusti* or Vitiation of *Pacakagni* and *Samanavayu*. The logical outcome of the *Grahani dosha* is firstly, the malabsorption

of the ingested food, resulting in the production of product described by *Caraka*, *Pakwa* or *Ama* and secondly the malabsorption of the products of digestion. The *Vaisamy* of *Samanavayu* causes the hyper motility of gut, results in frequent evacuation of the bowel, which is large and hard or liquid.

Caraka has mentioned that the *Visama*, *Tiksna Agni* may cause *Grahani dosha* but *Grahani roga* is the consequence of only *Mandagni*, Cakrapanidatta has commented that in *Grahani dosha*, *Grahani* passes the food in the stage of *Ama (Apakwa)* because of weak *Agni* and affection of *Doshas*.

The treatment of *Grahani Roga* should proceed on the full recognition of *Agnidusti*. *Grahani dosha* and much more so, *Grahani Roga*, represents the *dusti* and *dosa* of *Annavaha Srotamsi*, with the obvious implication that, in either case, there is the manifestation of *Amadosa* and *Sama*. The main line of treatment should, therefore, aim at:

- (a) *Dosa Pratyanyika Cikitsa* in *Grahani dosa* and breaking up of the vicious circle phenomenon by *Dipana* and *Pacana* therapeutics, and
- (b) *Vyadhipratyanika Cikitsa* in *Grahani roga* by properly conceived medicines (*Dipana* and *Pacana*) *Aharas* (Dietetics),

Swedana, *Vamana* as well as *Virecana*, where there are indications for them. Oleation, Sudation, Purification and lightening therapies, articles that are gastric stimulants, various kinds of *Curnas*, salts, alkalis, honey *Arista*, *Sura*, *Asava*, various kinds of butter milk courses, and digestive stimulant ghee should be resorted to, by the patient suffering from *Grahani*.

Use of *Takra* in *Grahaniroga* treatment

When we go through the classical literatures like *Charaka Samhita*, *Sushruta Samhita*, *Bhavaprakasha*, Chakradatta etc, in the treatment of *Grahani*, *Arsha* we get the judicial use of *Takra* in the form of medication⁷. As *Takra* is *Laghu* in *Guna*, possesses *Dipana* properties and attains *Mudhurapaka*, it does not provoke and increase *Pitta*, because of its *Kasaya Rasa*, *Usna Virya*, *Vikasi* and *Ruksa Gunas*, it is also useful in *Kapha*; as freshly churned *Takra* is sweet, slightly sour and sufficiently thick, it will not produce *Daha* in the *Kostha* and it is also *Vatahara*⁸ The advantage of *Takra* is that it contains less fat and is easily digestible, Caraka has also suggested the use of *Takra* and *Takrarista* in the routine treatment of *Grahani*⁹.

Treatment of *Vataja Grahani*:

If *Ama dosha* has not been separated or is still present in *Pakwasaya* as undigested matter, *Virecana* and *Snehana dravyas* may have to be administered¹⁰. When *Amarasa* is spread throughout the body *Langhana* and *Pacana* are indicated. After *Kostha Suddhi*, *Dipana Pacana Ousadha Siddha Peya* is indicated. After *Amapacana*, small dose of *Dipana Dravya Siddha Ghrta* may be administered¹¹. In *Vataj Grahani Acharya Charaka* mentioned *Deepan, Langhan* and *Paacha Chikitsa*¹².

Himanshwadi churna may helps in breaking *Samprapti* of *Vataj Grahani* due to properties like *Dipan, Pachan, Vatantuoman, Agnivardhan* as mentioned in *Bhaishajya ratnawali*. *Himanshwadi churna* used in *Vataj Grahani* w.s.r. IBS as medication for their management but medication along with psychological intervention gives more efficient results in IBS management.

MATERIALS AND METHODS

1. Prepration of *Himanshwadi churna* - *Himanshwadi churna* was prepared by standard reference given in *Bhaishajya Ratnawali*¹³. Coarse powder of *Himanshu* (kapoor) (1 part) *Rasna* (1 part) *Panchlavan* i.e. *Saindhav lavan, Samudrik lavan, Romak lavan, Surchal lavan, Bid lavan* (1 part), *Haritaki* (1 part) *Kshardvya* i.e. *Sarjjikshar*

& *Yavkshar* (1 part) *Trikatu* i.e. *Soonthi, Pippali, Marich* (1 part) fine *churna* of all the drugs was prepared. *Rasa* of *Bijpuranimba* was taken in equal quantity to mixture of all these ingredients. All the drugs along with *Rasa* of *Bijpurakniumba* were mixed carefully till obtaining homogenous fine *churna*.

Matra (dose) - 5 gm

Kala – Twice a day (*Saman Vayu Kal*)

Anupan : *Koshna Jala*

2. Preparation of *Takra* for *Dhara*:

Medicated curd is churned, sprinkling over with 200gms *Amalaki* pulp + 8 liters of boiling water and reducing it to 2 liters of *Amalaki kwatha*. Out of 2 liters 1.5 liters of *āmalaki kwatha* was added in curd, till all the butter is completely removed. The mixture of buttermilk and decoction thus, obtained is used for *dhārā*. The patients were previously anointed on the head with the *Ksheerabāla* oil.

INGREDIENTS QUALITYs

Amalaki 8 Tola= 80gm

Water 16 liter

Takra 1 liter

3. Height of *Takradhārā*:

Four *Angula* (Patient's) (3 inches) is the height for pouring the medicated buttermilk on the forehead of the patient but as per the K.P.K.V. height of *Shirodhara* is only two

*Angula*¹⁴. In body it is three times more than above i.e., 12 *Angula* (9inches) is advised in *Dhārākalpa*.

4. *Dharan Kala* (maintaining time of *Takradhārā*)

For the patient having dryness and *Pittayukta Vāta*, the *Dharan Kala* period is 2.5 *Prahara*. In *Snigdha Kaphayukta Vāta*, it is one *Prahara* or it should be up to perspiration. As per *Ayurved Samhita* one and half *Yāma* is *Param Kāla* for *Dhārā*¹⁵. The patient has to remain in the supine posture on his back. Generally treatment is done in the morning hours preferably between 7 to 10 A.M.

CLINICAL STUDY

This study carried out in year 2013-14 with the approval of Smt. K.G.M.P. Ayurvedic Hospital, Mumbai. Ethical clearance was obtained from Institutional ethical Committee before commencement of study (KGMP/ETHICAL.COM/Thesis2005/2013-14). Total 60 patients having signs and symptoms of *Vataj Grahani* were selected from Outpatient Department Smt. K.G.M.P. Ayurvedic Hospital, Mumbai. Informed consent was taken from each registered patient before starting the treatment. Those patients who have not able to report OPD regularly were rejected and

replaced by another randomly selected subject.

SELECTION OF PATIENT

1. Inclusive Criteria:-

- Patients between 20-70 yrs of age of both sex.
- Patients showing classical symptoms of *Vataj Grahani* as mentioned in *Brihatatrayi* and other *Samhitas*.
- K/C/O I.B.S. Diagnosed by sign and symptoms as mentioned in modern science

2. Exclusive Criteria:-

- Patients below 20yrs and above 70yrs of age.
- Pregnant and lactating women
- K/C/O Abdominal Koch's, CA of stomach
- K/C/O gastric ulcers, intestinal obstruction
- K/C/O ulcerative colitis and cronhs disease.
- Those patients showing acute symptoms and symptoms indicating fatal consequences

MONITORING OF PATIENTS

Patient will be selected according to criteria described earlier for clinical study. General information will be elicited, complete medical history; physical examinations will be carried out.

WITHDRAWAL CRITERIA

A patient may be withdrawn from the trial in case of

- i) Development/of occurrence of the life threatening illness.
- ii) Severe adverse effect of drug occurring during the trial.

The decision of withdraw will be taken after discussion with guide who will give concerned treatment. Subjective criteria and gradation will be depicted in Table no.1

CLINICAL ASSESSMENT

Table 1 Subjective criteria:- Gradation of symptoms

Sr.No	Lakshan	0	1	2	3
01	Abdominal pain	Absent	Mild	Moderate	Severe
02	Abdominal discomfort	Absent	Mild	Moderate	Tiredness on rest
03	<i>Aadhmanam</i>	Absent	Mild	Moderate	Severe
04	<i>Shwas</i>	On heavy exertion	On exertion	Even after daily activities	Present even at rest
05	<i>Aasyavairasya</i>	Absent	<i>Aasyavairasya</i> related to only daily food	<i>Aasyavairasya</i> seen on fresh and good food.	<i>Aasyavairasya</i> seen all type of food
06	<i>Shuktpaka</i>	Absent	Sometime after taking food	Regularly after taking some food	Commonly , not related to taking of food or not
07	<i>Grudhi sarvrasanam</i>	Absent	Mild	Moderate	Severe
08	<i>Trushna</i>	Absent	Mild	Trushna occurs after taking sometimes	Trushna occurs any time. Frequently
09	<i>Karnaswanam</i>	Absent	Mild	Sometimes feel	Regularly or commonly
10	<i>Mana sadnam</i>	Absent	Mild	Sometimes	Regularly or commonly
11	<i>Kruchapaka</i>	Absent	Mild	Sometimes	Regularly or commonly
12	Alteration of bowel habit	Rarely	Monthly	Weekly	Frequently
13	<i>Shushka Tanu</i>	Absent	Sometimes	Regular	Commonly
	<i>Apkwa</i>	Mild	After meal	Regular	Commonly
	<i>Phenyukta</i>	Mild	After meal	Regular	commonly
	<i>Malapravrutti</i>	Somimes	Regular	commonly	commonly

Relief is characterized by reduction in symptoms from 3,2,1,0

Grades:-

0 – No relief in associated symptoms

1(+) – Mild relief in associated symptoms

2(++) – Moderate relief in associated symptoms

3(+++) – Complete relief in associated symptoms

INVESTIGATION

Investigations done in this study is depicted in Table no.2

Table 2: Parameters of conducted investigation

Pathological Parameters	Radiological Parameters
CBC/ESR	Barium meal of

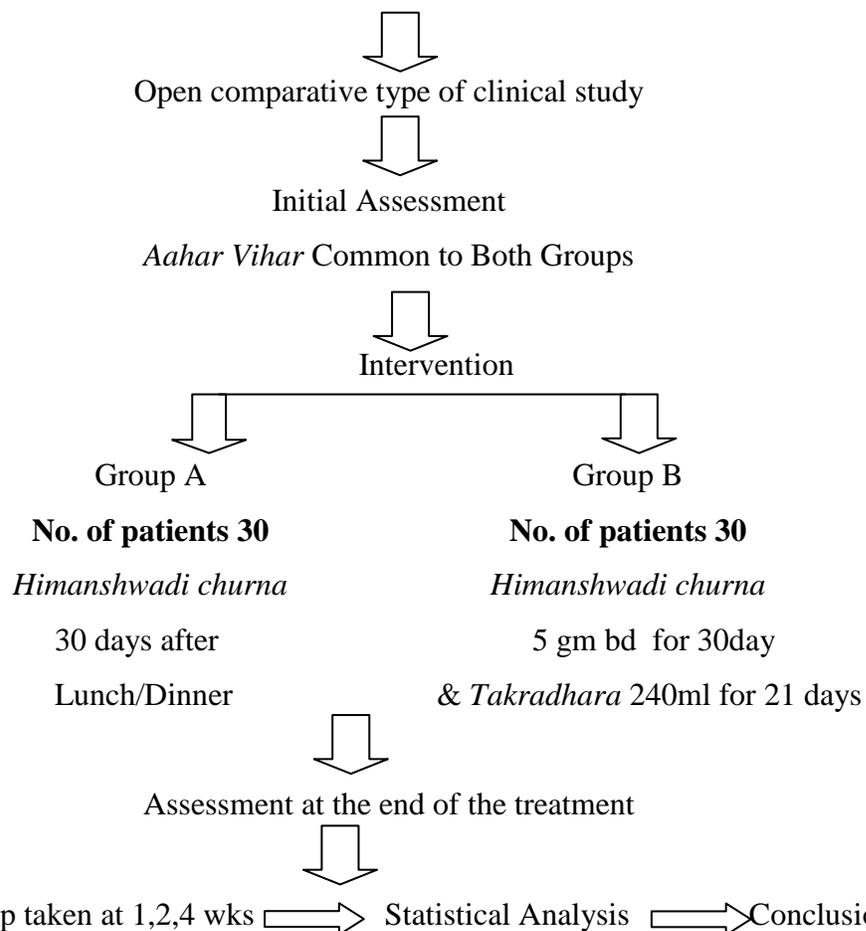
	lower GIT
Stool examination: routine and microscopic	

MALA PARIKSHAN

Sam Niram, Shushka ,Muhurbadham ,Muhur Dravam ,Phenyuktam ,Sashabdam Malapravrutti.

STUDY DESIGN

Screening of subject for inclusion (counseling, informed and consent)

**Statistical Analysis:**

Though the data collected in this study was 'Rating Scale' data; both parametric as well as nonparametric tests could be applicable.

But after treating this data by statistical software, it was found that distribution of data was not according to normal distribution [gaussian distribution]. That is

why 't' test was not applicable [as for application of t test requires data to be have normal distribution]. After taking expert advice of Statistician, data was treated with first WILCOXON MATCH PAIRED TEST for every symptom of each group to check whether given treatment makes any changed in disease or not.

OBSERVATIONS:

Among 60 patients who have completed the treatment and follow-up were observed for *Prakurti* wise classification and it is found that majority of patients were of *Vata-Kaphaj Prakurti* (28.66%), hence it shows they are more prone to disease. The incidence of this disease was seen higher in service going people (46.66%), 72% patients were from urban area, (45%) patients had tea as addiction. 36.66% of patients had *Mandagni*, obviously it is the reason for *Grahani Roga*, remaining 46.66% of patients had *Visamagni* which is once again a prime factor in the pathogenesis of *Grahanidosa* and ultimately *Grahaniroga*. Apart from other *Nidana Virudh ahara (Vishmasha)* (45%) and *Manasika* (36.66%) *Karana* were found to be the main aetiological factors which clearly points towards lifestyle and habits in this area. Maximum patients are having sentimental emotional status (35%) followed by

Depression emotional Status (26.66%). Weak emotional status which indirectly affects digestive system causing *Agnidushti* which leads to *Grahani*. *Krura Koshta* was found in 46.66% of patients which may be due to vitiation of *Samana Vayu* which plays an important role in the pathogenesis of *Grahani*. This shows that maximum patients approached were of chronicity between >20-40 (58.33%) Rest were between >15-20 (23.33%) in these mostly exposed to stressful life, roadside eating, having faulty food habit so these group prone to *Vataj Grahani*.

RESULTS

Effect of therapy on Subjective Parameters

In Group-A excellent [70-80%] results were found in symptoms like abdominal pain, abdominal discomfort, good results [50-70%] were found in symptoms like *adhmanam*, *Shwas*, *Aasyavairasya*, *Grudhi Sarva Rasanam*, alteration of bowel habite, *Shushka*, *Tanu*, *Apakvam*, *Fenvat Malpravrutti* and average results (25-50%) was found in *Manasadanam*, *Karnaswana*, *Kruchapaka*. Whereas in Group-B; excellent results (70-95%) were found in symptoms

like abdominal discomfort, *Shwas*, *Aasyavairasya*, *Shuktapaka*, *Grudhi Sarva Rasanam*, *Trushna*, *Kruchapaka*, *Manasadanam*, *Karnswanam*, Alteration of bowel habite and *Shushka*, *Tanu*, *Apakvam* *Fenavat Malpravrutti*. Good results [50-75%] were found in symptoms like abdominal pain and Aadhmanam. Average percent relief in Group A and Group B is 61.47% and 74.13% respectively. This prediction indicates better result in group B.

Effect of therapy on Objective Parameters

On the basis of *Malaparikshan*, it is clear that there is no significant difference between results of Group A & Group B in objective parameters

DISCUSSION

Considering, gradation of symptoms most of the symptoms in group A showed extremely significant results. In Group-A excellent [70-80%] results were found in symptoms like abdominal pain and abdominal discomfort. Moderate relief [50-70%] was observed in symptoms like flatulence, breathing difficulty, tastelessness, alteration of bowel habit, *Shushka*, *Tanu*, *Apakvam*, *Fenvat Malpravrutti* and average result (25-

50%) was found in *Manasadanam*, *Karnaswana*, *Kruchapaka*.

Statistically, almost all the symptoms in group B showed extremely significant results which are better compared to group A. It is evident from statistical data that significant effectiveness regarding symptoms such as *Karnaswanam*, *Mansadanam* (psychological symptoms) is more in group B than group A which is due to application of *Takradhara* therapy (psychological intervention) in group B.

To understand the difference in efficacy of both groups, unpaired 't' test and was applied, which shows group B is better than group A. The results of this study have undoubtedly established the supremacy of *Himanshwadi churna* with *Takradhara* over *Himanshwadi churna* itself alone. In objective criterion All investigation should be normal so no change in objective criterion but on the basis of *Mala Parikshan* i.e. *Samayukt Apakva* form of stool consistency get converted in the form of *Pakva Niram Swarup*.

On the basis of objective criterion *Malaparikshan (Malaswarup)*, Group A gives very significant result and group B gives extremely significant results but there is no significant difference between results of Group B & group A in objective

symptom wise parameters on the basis of *Malaparikshan*. *Takradhara* significant decreases the intestinal motility. Hence, it would be essential to discuss the probable mechanisms of this action. Gut motility to large extent is controlled by a two important nerve plexus system together grouped under the heading of enteric nervous system. It is a large and highly organized system. It includes myenteric plexus (plexus of Auerbach) and submucosal plexus (plexus of Meissner). Both these neuronal plexus receive pre-ganglionic parasympathetic and post-ganglionic sympathetic fibers. Further they receive sensory stimuli from within the structure present on the gut wall. The smooth muscle fibers present in the gut wall receive nerve fibres from the cells of these plexuses and their activity controls the motility of the gut. Further the motility is also modulated by locally released prostaglandins which are known to stimulate intestinal motility and secretion. It can be suggested that *Takradhara* contains active constituents and *Ojovardhak*, *Agnivardhak* like properties decrease intestinal motility probably through attenuating. The effect of excitatory neurotransmitter or interfering with their bio-synthesis. It is also possible that they may be acting through neuronal blocking. Another possible mechanisms is

that it may be enhancing the activity or formation of inhibitory neurotransmitter and neuromodulators. *Takra* has *Amla Kashaya Rasa*, *Usna Virya*, *Laghu*, *Ruksa-Grahi Guna* all these are '*Sthambhaka*' and '*Grahi*' properties. It can be assumed that *Ojovardhak* property reduces stress. These properties confirm the role of *Takradhara* reducing the intestinal motility and increasing the faecal output and excretion of well formed stools improving the absorption. Clinical studies involving larger sample size and advanced laboratory technologies are needed to scientifically evaluate the effect of similar therapy with physiological and pathological point of view.

CONCLUSION

The clinical trial showed excellent results in both the trial groups. This proved the utility and relevance of *Himanshwadi churna* as well as *Himanshwadi churna* with *Takradhara*. During study, no patient showed deterioration in symptoms after commencement of treatment. *Samyak Poorva karma* like *Deepan-Paachan*, etc. is very important so as to avoid *Vyapada* [complications] in *Takradhara* therapy. Both groups gives extremely significant results in *Malaswaru* (consistency of

stool).The clinical improvement provided by *Himanshwadi churna* & *Himanshwadi churna* with *Takradhara* presents new availability in the management of *Vataj Grahani* (IBS), so that the Quality of life of the patients can definitely be improved. For more validity & confirmation of result, study should be conducted in population with large population size. Also, various other combinations of formulations of *Siddha Ghritas* may be tried clinically.

REFERENCES

1. Bhaishajya Ratnavali, Shri Govind Dasji, Translated by Dr Kanjiv Lochan, Grahani Chikuitsa Prakaran, Chaoukhmabha Sanskrit Sansthan, Varanasi, 8/20-21, Vol 1: edition 2008. pp 479
2. Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa Adhyaya, 15/56-57, Edited by R.K Sharma, Bhagwan dash, Vol IV, Edition 2013, Chaukhambha orientalia Publication, Varanasi. page 29
3. Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa Adhyaya, 15/56-57, Edited R.K Sharma, Bhagwan dash, Vol IV, Edition 2013, Chaukhambha orientalia Publication, Varanasi. page 28
4. Chakrapani, Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa Adhyaya, 15/1, Edited by Vaidya Yadavaji Trikamji Aacarya, Edition 2008, Chaukhambha Surbharti Publication, Varanasi. page 512
5. Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa Adhyaya, 15/51, Edited R.K Sharma, Bhagwan dash, Vol IV, Edition 2013, Chaukhambha orientalia Publication, Varanasi. page 82
6. Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa Adhyaya, 15/42-44, Edited R.K Sharma, Bhagwan dash, Vol IV, Edition 2013, Chaukhambha orientalia Publication, Varanasi. page 88
7. Acharya Susrutha. Susrutha Samhita Nibandhasamgrahaof Dalhanacharya, Nyayacandrika Panjika of Sri Gayadasacarya, edited by Vaidya Yadavji Trikamji Acharya, Narayan Ramacarya Kavyatirtha. Varanasi: Chaukhambha Krishnadas Academy; reprint 2004. pp. 734
8. Ashtanga Hridayam, Ciddhisthana, Arsha Chikitsa, 10/12, Edited by K.R. Srikantha Murthy, Vol II, Edition 2009, Chaukhambha Orientalia Publication, Varanasi, page 382.
9. Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa Adhyaya, 15/117-119, Edited R.K Sharma, Bhagwan dash, Vol IV, Edition 2013, Chaukhambha orientalia Publication, Varanasi. page 46
10. Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa Adhyaya, 15/75, Edited R.K Sharma, Bhagwan dash, Vol IV, Edition 2013, Chaukhambha orientalia Publication, Varanasi. page 35.
11. Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa

Adhyaya, 15/76, Edited R.K Sharma, Bhagwan dash, Vol IV, Edition 2013, Chaukhambha orientalia Publication, Varanasi, page 35.

12. Agnivesha Charak, Dridhabala, Charak Samhita, Chikitsa Stahana, Grahani Chikitsa Adhyaya, 15/75, Edited R.K Sharma, Bhagwan dash, Vol IV, Edition 2013, Chaukhambha orientalia Publication, Varanasi, page 35.

13. Bhaishajya Ratnavali, Shri Govind Dasji, Translated by Dr Kanjiv Lochan, Grahani Chikitsa Prakaran, Chaoukhmabha Sanskrit Sansthan, Varanasi, 8/20-21, Vol 1: edition 2008, pp 479

14. Vaidya Haridas Shridhar Kasture, Ayurvediya Panchakarma Vigyan, 6th Edition Published by Baidyanath Prakashan, Nagpur 1999.

15. Gotmare Ashish et al, International Journal of Research in Ayurveda and pharmacology, 4(4)- July- Aug 2013, 541-544.