

## A COMPARATIVE STUDY ON GREEVA BASTI AND ITS MODIFIED SCHEDULE IN GREEVA HUNDANAM WITH TILA TAILA

Sreejith. J. R<sup>1</sup>, VikramKumar<sup>2</sup>

<sup>1</sup>Final year P.G Scholar, <sup>2</sup>Associate Professor,  
Department of P.G studies in Panchakarma, Alva's Ayurveda Medical College and Hospital, Moodabidri,  
Dakshina Kannada, Karnataka, India

Email: [drsreejith9@gmail.com](mailto:drsreejith9@gmail.com)

<https://doi.org/10.46607/iamj0807092020>

(Published online: July 2020)

Open Access

© International Ayurvedic Medical Journal, India 2020

Article Received: 08/07/2020 - Peer Reviewed: 09/07/2020 - Accepted for Publication: 09/07/2020



### ABSTRACT

*Greeva Hundanam* is a condition in which vitiated *Vata* lodges in the neck region and leads to stiffness of the neck with signs and symptoms of vitiation of *Vata*. The word *Greeva* means neck. The word *Hundanam* conveys two meanings. The first one is “*Shiro Prabhrutinam Antah Pravesha*”. It means inward intrusion of the head and its allied parts. It is possible due to implication with cervical parts. Structural deformity is also a suggestive condition. The other meaning is “*Greeva Stambha*”, which denotes the restriction of the movements of the neck. Cervical Spondylosis is the degenerative condition of the cervical spine with signs and symptoms like neck pain, numbness, muscle spasm, neck stiffness, restricted range of movements of neck etc. Signs and symptoms of *Greeva Hundanam* resembles with that of Cervical Spondylosis. So, both Clinical Conditions can be compared with each other. *Tila Taila* is having *Vatahara* property used in treating *Vatavyadhi*. Also, in the previous study it has been reported that *Tila Taila* used in *Greeva Basti* was beneficial in reducing the signs and symptoms of *Greeva Hundanam*. So, in this study an attempt was done to evaluate and compare the effect of *Greeva Basti* and its modified schedule in *Greeva Hundanam* with *Tila Taila*.

**Keywords:** *Greeva Basti*, *Greeva Hundanam*, *Tila Taila*, Cervical Spondylosis

## INTRODUCTION

Basic core of Ayurvedic treatment consists of six therapies i.e. *Langana*, *Brimhana*, *Rukshana*, *Snehana*, *Swedana* and *Stambhana*. Among these *Snehana* and *Swedana* plays a major role in the management of disorders caused due to vitiation of *Vata*. *Snehana* causes *Sneha* (unctuousness), *Vishyandata* (liquefaction), *Mardavata* (softness) and *Kledata* (moistness) in the body. *Swedana* is capable of mitigating *Stambha* (stiffness), *Gaurava* (heaviness) and *Sheeta* (coldness). It is broadly classified in to *Snigdha* and *Ruksha* variety based on the property of the materials used for the procedure<sup>1</sup>.

*Greeva Basti* is a *Snigdha Swedana* procedure conducted over the cervical region by retaining warm medicated oil within a specially formed frame for a specific duration. A frame of black gram paste is made around the painful cervical region. Junction between the frame and skin is sealed to make it leak proof. Warm medicated oil is poured into this frame. This warm oil heats the affected area inducing perspiration. This is the procedure of *Greeva Basti*. It is indicated in painful conditions of cervical region like, Cervical Spondylosis, Spondylolysthesis, Disc prolapse, Ankylosing spondylitis, Rheumatoid arthritis etc<sup>2</sup>.

*Greeva Hundanam* is a clinical condition occurring in the neck region. It is caused due to the vitiation of *Vata dosha*<sup>3</sup>. It comprises of two words *Greeva* and *Hundanam*. The word "*Greeva*" means the neck<sup>4</sup> and *Hundanam* means inward intrusion of the head and its allied parts. The other meaning is *Greeva Stambha* which means stiffness of neck<sup>5</sup>.

Cervical Spondylosis is a degenerative osteoarthritis of the cervical spine may produce neck pain that radiates into the back of the head, shoulder or arms or may be source of headache in the posterior occipital region<sup>6</sup>. It is a common disease affecting the middle and old age group of both sex and prevalent worldwide, lifetime incidence of cervical Spondylosis is said to be 40-60%<sup>7</sup>. Signs of Cervical Spondylosis are localised tenderness, limited range of movement. Symptoms are cervical pain aggravated by movement, referred pain (occiput, between the shoulder blades, upper limbs), retro-orbital

or temporal pain (from C<sub>1</sub> to C<sub>2</sub>), cervical stiffness—reversible or irreversible, vague numbness, tingling, or weakness in upper limbs, dizziness, poor balance, rarely syncope, triggers migraine<sup>8</sup>. Signs and symptoms resemble with *Greeva Hundanam*. So, both Clinical Conditions may be compared with each other.

*Tila Taila* (Sesame oil) is considered as the best among the various oils. *Tila Taila* is the best *dravya* for *vata dosha*. *Taila* alleviates *vata dosa* but does not aggravate *kapha dosha*. It is used in all types of dislocations of joints and fractures<sup>9</sup>. Also, in the previous study it has been reported that *Tila Taila* used in *Greeva Basti* was beneficial in reducing the signs and symptoms of *Greeva Hundanam*.

In general practice *Greeva Basti* is performed only once a day. *Greeva Basti* performed in the modified schedule i.e. performed twice a day during morning and evening might have some added effect.

So, in this study an attempt was done to evaluate and compare the effect of *Greeva Basti* and its modified schedule with *Tila Taila* in reducing the signs and symptoms of *Greeva Hundanam*.

### Objectives

- To evaluate the efficacy of *Greeva Basti* in *Greeva Hundanam* (Cervical Spondylosis) with *Tila Taila*.
- To evaluate the efficacy of modified schedule *Greeva Basti* in *Greeva Hundanam* (Cervical Spondylosis) with *Tila Taila*.
- To compare the efficacy of *Greeva Basti* and its modified schedule in *Greeva Hundanam* (Cervical Spondylosis) with *Tila Taila*.

### Hypothesis

**H<sub>0</sub>** – There is no effect of *Greeva Basti* and its modified schedule in *Greeva Hundanam* (Cervical Spondylosis) with *Tila Taila*.

**H<sub>1</sub>** – *Greeva Basti* has better effect than modified schedule *Greeva Basti* in *Greeva Hundanam* (Cervical Spondylosis) with *Tila Taila*.

**H<sub>2</sub>** – *Modified schedule Greeva Basti* has better effect than *Greeva Basti* in *Greeva Hundanam* (Cervical Spondylosis) with *Tila Taila*.

**H<sub>3</sub>**-Both *Greeva Basti* and its modified schedule *Greeva Basti* have significant effect with *Tila Taila* in *Greeva Hundanam* (Cervical Spondylosis)

**Materials & Methods**

**Source**

**Literary Source:** All the Ayurveda and contemporary texts including the websites about the disease procedure and drug were reviewed and documented for the study.

**Sample Source:** Patients suffering from *Greeva Hundanam* (Cervical Spondylosis) were selected from OPD and IPD of Panchakarma of Alva’s Ayurveda Medical College Hospital, Moodabidri.

**Drug Source:** Tila Taila were procured from the local market.

**Method of Collection of Data**

- I. **Study design:** Comparative clinical study.
- II. **Sample Size:** Minimum 40 patients suffering from *Greeva Hundanam* (Cervical Spondylosis) fulfilling the diagnostic and inclusion criteria belonging to either sex irrespective of socio-economic status or caste were selected for the clinical study. They were randomly assigned in to *Tila Taila Greeva Basti* (TTGB) and Modified Schedule *Tila Taila Greeva Basti* (MTGB) groups using lottery method.

**III. Selection Criteria:** The cases were selected as per signs and symptoms of *Greeva Hundanam* (Cervical Spondylosis).

**Diagnostic Criteria:**

- *Greeva Shoola*
- *Greeva Sthamba*

**Inclusion Criteria:**

- Patients having classical signs and symptoms of *Greeva Hundanam* and Cervical Spondylosis.
- Patients between 20 to 70 years of age.
- Patients who are fit for *Snigdha Sweda*.

**Exclusion Criteria:**

- Patients having associated conditions like Fibrositis, Rheumatoid Spondylosis, and Ankylosing Spondylosis will be excluded.
- Patients with history of traumatic injury to the cervical spine.

**Procedure**

**Group- TTGB (*Tila Taila Greeva Basti*)**

**Group-MTGB (*Modified Schedule Tila Taila Greeva Basti*)**

The procedure for two groups is similar. In group TTGB *Tila Taila* was used in *Greeva Basti* Procedure. Where as in MTGB procedure was similar but the procedure was done in morning and evening.

**Table 1:** Greeva Basti Procedure

Sl. No		Procedure
1	Purvakarma	<b>Preparation of the dough:</b> The black gram flour is well mixed with sufficient quantity of warm water into a thick paste. It is then made into flat slab-like structure. <b>Preparation of patient:</b> After passing stool and urine properly patient is asked to lie down on the table in prone position with neck and head straight, the cervical region is well exposed and arms keeping under the forehead. Then the dough is pasted in a circular manner on the neck.
2.	Pradhana Karma	Warm medicated oil is poured into this frame. Oil is heated in a Water bath. The heat of the medicated oil should be sufficient enough to tolerate by the patient. This oil is poured into the frame. The upper level of the oil should be approximately 1 inch above the skin. The oil poured in the beginning gets cooled as time passes. When it gets cooled, the oil is taken out from the frame with the help of a spoon. Alternatively, one can soak a piece of cotton cloth in the oil to remove and add the oil. Fresh warm oil is then poured into the frame. The cooled oil that is taken out is now kept in the water bath for heating and will be reused later during the procedure of <i>Greeva Basti</i> . In this way as the oil in the frame cools down, it should be replaced by the warm one. This procedure of heating the cervical region with warm oil is continued for about half an hour.
3.	Paschat Karma	The oil and the frame are removed. Then the area is wiped off and cleaned with a towel dipped in hot water. This completes the procedure of <i>Greeva Basti</i> .

**Study Duration**

- Group- TTGB – Total study duration – 7 days
- Group-MTGB – Total Study duration – 7 days

**Observation Period**

- Initially on the first day before treatment.
- On the 7<sup>th</sup> day after treatment.

**Follow up**

Both Groups was followed on 14<sup>th</sup> Day, and 28<sup>th</sup> day after completion of treatment Protocol.

**Assessment Criteria**

Assessment of the condition was done based on the detailed Proforma adopting standard method of scoring of subjective and objective parameters which was analysed statistically.

**Subjective Criteria**

- Neck Pain
- Neck Stiffness

- Neck Disability Index

**Objective Criteria**

- Flexion
- Extension
- Right Lateral Flexion
- Left Lateral Flexion
- Right Rotation
- Left Rotation

Measured by using Goniometer and based on degree obtained by using Goniometer, statistically values are analysed.

**Statistical Test:** Obtained data was analysed statistically with student ‘t’ test and relevant statistical test.

**Investigations:**

X-RAY Cervical Spine AP View and Lateral View.

**Grading for Assessment Criteria**

**Neck Pain**

**Table 2:** Grading of Pain

Symptoms	Grading
No Pain	0
Pain in the neck	1
Pain in the neck, mild aggravation with movement	2
Pain in the neck, moderate aggravation with movement	3
Pain in the neck, severe aggravation with movement	4
Pain in the neck, Severe aggravation with movement and Disturbs Sleep	5

**Neck Stiffness**

**Table 3:** Grading of Stiffness

Symptoms	Grading
No Stiffness	0
Sometimes for 5 - 10 min	1
Daily for 10 - 30 min	2
Daily for 30 - 60 min	3
Daily more than 1 hr	4
Severe, unable to move	5

**Neck Disability Index:** Assessment of pain by Neck disability index and obtained value statistically analysed

**Table 4:** Assessment of Total Effect Of The Therapy

Grading	Percentage
Complete	76 – 100%
Marked	51 – 75%
Moderate	26 – 50%
Mild	1 – 25 %
No improvement	0%

## Observations and Results

**Table 5:** Showing the Observations of the Clinical Study

Sl No	Observation		Group TTGB (No Of Patients=20)	Group MTGB (No. Of Patients = 20)	Total (N = 40)	(%)
1.	Age	20 - 30	13	10	23	57.5 %
		31 - 40	2	3	5	12.5 %
		41 – 50	2	5	7	16.6 %
		51 – 60	3	2	5	11.9 %
		61 - 70	0	0	0	0 %
2.	Sex	Male	15	11	26	65 %
		Female	5	9	14	33.33 %
3.	Occupation	Housewife	1	9	10	25 %
		Office Work	5	4	9	22.5 %
		Teacher	1	0	1	2.5 %
		Student	12	7	19	47.5 %
		Business	1	0	1	2.5 %
4.	Marital Status	Married	7	13	20	50 %
		Unmarried	13	7	20	50 %
5.	Socio – Economic	Higher	3	0	3	7.5 %
		Middle	15	19	34	85 %
		Poor	2	1	3	7.5 %
6.	Food	Vegetarian	2	4	6	15 %
		Mixed	18	16	34	85 %
7.	Appetite	Good	15	17	32	80 %
		Poor	5	3	8	20 %
8.	Bowel	Regular	10	8	18	45 %
		Irregular	4	6	10	25 %
		Constipated	6	6	12	30 %
9.	Nature.of Work	Strenuous	5	5	10	25 %
		Moderate	14	15	29	72.5 %
		Sedentary	1	0	1	2.5 %
10.	Sleep	Sound	15	16	31	77.5 %
		Disturbed	5	4	9	22.5 %
11.	Habits	Nil	10	15	25	62.5 %
		Tea/Coffee	9	5	14	35 %
		Smoking	0	0	0	0 %
		Alcohol	1	0	1	2.5 %
12.	Prakruti	Vata	3	4	7	17.5 %
		Pitta	0	1	1	2.5 %
		Kapha	0	0	0	0 %
		VataPitta	1	3	4	10 %
		VataKapha	9	6	15	37.5 %
		KaphaPitta	7	6	13	32.5 %
		Tridosha	0	0	0	0 %
13.	Sara	Pravara	2	2	4	10 %
		Madhyama	14	12	26	65 %
		Avara	4	6	10	25 %

14.	Samhanana	Pravara	2	1	3	7.5 %
		Madhyama	15	16	31	77.5 %
		Avara	3	3	6	15 %
15.	Ahara Shakti	Pravara	1	8	9	22.5%
		Madhyama	15	10	25	62.5%
		Avara	4	2	6	15%
16.	Koshta	Pravara	2	1	3	7.5 %
		Madhyama	11	17	28	70%
		Avara	7	2	9	22.5%
17.	Vyayama Shakti	Pravara	1	6	7	17.5 %
		Madhyama	6	5	11	27.5 %
		Avara	2	9	22	55 %
18.	Agni	Manda	2	4	6	15 %
		Tikshna	3	7	10	25 %
		Sama	11	8	19	47.5 %
		Vishama	4	1	5	12.5 %
19.	Chronicity	1 – 6 month	7	3	10	25 %
		7 – 12 month	7	9	16	40 %
		1 – 2 year	6	8	14	35 %

## RESULTS

In the present study 40 patients of *Greeva Hundanam* were treated in two groups. In Group 'TTGB', 20 patients were given *Greeva Basti* with *Tila Taila* once in a day and in Group 'MTGB', 20 patients were treated with *Greeva Basti* with *Tila Taila* two times a day. The results were assessed on the basis of subjective criteria such as pain, stiffness, neck disability index. Objective criteria such as flexion, extension, right lateral flexion, left lateral flexion, right rotation, left rotation. Both the individual effect (using paired 't' test) and the comparative effect (using unpaired 't' test) of procedures in subjective criteria and objective criteria on 7<sup>th</sup>, 14<sup>th</sup> and 28<sup>th</sup> day in Group 'TTGB' and 'MTGB' were calculated. Finally, the overall effect of the treatment and also the comparative effect of treatment between Group 'TTGB' and Group 'MTGB' were calculated.

### Comparison Of Treatment Effect On Neck Pain In Between Groups

The difference in the mean values of the two groups is not great enough to reject the possibility that the difference is due to random sampling variability. There is a statistically significant difference between the groups ( $P < 0.05$ )

### Comparison Of Treatment Effect On Stiffness Between Groups

The difference in the mean values of the two groups is not great enough to reject the possibility that the difference is due to random sampling variability. There is a statistically significant difference between the input groups ( $P < 0.05$ ).

### Comparison Of Treatment On Neck Disability Index In Between Groups

The statistical analysis in Group TTGB, showed that the mean score which was 13.70. Group MTGB, showed that the mean score which was 9.35. The difference in mean was 4.35. When these values were analyzed statistically, the difference was significant in Group MTGB at the level of  $P < 0.05$ .

### Comparison Of Treatment Effect On Flexion In Between Groups

The difference in the mean values of the two groups is not great enough to reject the possibility that the difference is due to random sampling variability. There was not a statistically significant difference between the input groups ( $P > 0.05$ )



**Comparison Of Treatment Effect On Neck Extension In Between Groups**

The difference in the mean values of the groups is not great enough to reject the possibility that the difference is due to random sampling variability. There is not a statistically significant difference between the input groups  $P>0.05$

**Comparison Of Treatment Effect Of Right Lateral Flexion Between The Groups**

The difference in the mean values of the two groups was not great enough to reject the possibility that the difference was due to random sampling variability. It was found that there was no statistical significant difference between the groups  $P>0.05$

**Comparison Of Treatment Effect Of Left Lateral Flexion In Between The Groups**

The difference in the mean values of the two groups was not great enough to reject the possibility that the

difference was due to random sampling variability. There was no statistical significant difference between the input groups ( $P>0.05$ )

**Comparison Of Treatment Effect Of Right Rotation In Between The Groups**

The difference in the mean values of the two groups was not great enough to reject the possibility that difference is due to random sampling variability. There was no statistical significant difference between the input groups. ( $P>0.05$ )

**Comparison Of Treatment Effect Of Left Rotation In Between The Groups**

The difference in the mean values of the groups was not great enough to reject the possibility that the difference is due to random sampling variability. There was statistically significant difference between the groups. ( $P<0.05$ )

**Assessment Of Overall Effect Of Treatment**

**Table 6:** Overall Effect Of Group TTGB

Effect of Treatment in Group in TTGB		
Percentage	Grading	No of Patients
76 - 100%	Complete	1
51 - 75%	Marked	4
26 - 50 %	Moderate	13
1 - 25 %	Mild	2
0	No improvement	0

**Table 7:** Overall Effect Of Group MTGB

Effect of Treatment in Group in MTGB		
Percentage	Grading	No of Patients
76 - 100%	Complete	5
51 - 75%	Marked	12
26 - 50 %	Moderate	3
1 - 25 %	Mild	0
0	No improvement	0

**Table 8:** Comparative Result Of Group TTGB And Group MTGB

Characteristics	Group TTGB			Group MTGB		
	Mean Score		Percentage of relief	Mean Score		Percentage of relief
	BT	AT		BT	AT	
Pain	3.45	1.70	50.72%	4.05	1.15	71.6%
Stiffness	2.85	1.40	50.8%	3.10	.85	72.58%
Flexion	32.63	42.00	28.71%	30.50	42.50	39.3%

Extension	33.88	51.75	52.74%	32.00	55.50	73.43%
Right Lateral Flexion	27.75	36.50	31.53%	29.25	38.75	32.43%
Left Lateral Flexion	29.00	42.63	47%	28.25	44.50	57.52%
Right Rotation	62.88	73.00	16.09%	62.00	72.50	16.93%
Left Rotation	67.00	77.75	16.04%	67.50	81.50	20.74%
Neck Disability Index	24.45	13.70	43.96%	28.5	9.35	67.19%

## DISCUSSION

### Discussion on Probable Mode of Action Of Greeva Basti In Greeva Hundana

*Greeva Basti* is one of the *Bahya Shamana Chikitsa* which acts through *Snehana* and *Svedana*. *Sneha* is used as a media in case of *Greeva Basti*, its action facilities in alleviating *Vata*. *Sneha dravya* are predominant of *Drava, Sara, Snigda, Picchila, Guru, Sheeta, Mridhu* and *Manda guna*. The *Vata Dosha* which is the key factor in the causation of *Greeva Hundanam*. The qualities of *Sneha* are opposite to *Vata Guna*. Moreover, *Sneha dravya* have the similar property to that of *Kapha dosha*. In *Greeva Hundanam* There is *Sthanika Kapha Kshaya* due to *Vata Dosha Vriddhi*; which is the factor for degeneration. Thus, the *sneha dravya* neutralises the *Vata dosha* and on the other hand nourishes the *Stanika Kapha Kshaya* due to *Vata dosha Vriddhi*; which is the factor for degeneration. Thus, the *Sneha Dravya* neutralises the *Vata Dosha* and on the other hand nourishes the *Stanika Kapha Dosha*. This helps in *Samprapti Vighatana*.

*Svedana* has the properties of neutralising *Stambha* and *Sheetata*. In *Greeva Hundanam* neck pain and stiffness are the clinical features. *Greeva Basti* may have action on these symptoms. The stiffness is mainly due to *Sheeta Guna* of *Vata*. This *Sheeta Guna* is neutralised by *Ushna guna* of the retained medicine.

*Tila Taila* acts through *Ushna Veerya* in alleviating *Vata Dosha*. In disease Cervical Spondylosis (*Greeva Hundanam*), the neck stiffness is mostly due to the contraction of the muscles, which are responsible for neck movements.

A prolonged heat application will cause the rise of temperature at the area of application and increased metabolism especially increased oxidation of Albumin. Mainly produces sedation effect at the site of application and leads to dilatation of capillaries at the terminal

region and contraction of internal vessels. So, the blood is drawn towards the periphery, finally promoting the phagocytosis process and also combating any inflammatory process.

The reduction of pain may be due to the counter irritant and sedative effect of the procedure and also due to specific *Vatahara* property of the drugs used.

Amount of heat given to *taila* interchange *guna* of both media and *dravya*. Both *Vayu* and *Agni* among *Panchamahabhutas* process *Laghu* and *Sookshma guna* predominantly. In the process *Agni* is given indirectly, so the ions of media will receive the *Ushma* and they penetrate into the drug and release entire *gunamsha* of *dravya*. When that is administered either externally or internally induces effects of *Dravya*.

## CONCLUSION

The study was intended to compare the efficacy of *Greeva Basti* with *Tila Taila* and Modified Schedule *Tila Taila Greeva Basti* in *Greeva Hundanam* (Cervical Spondylosis)

- ❖ From the clinical trials, observations and discussions it can be concluded that *Greeva Basti* with *Tila Taila* and Modified Schedule *Tila Taila Greeva Basti* have significant relief in all the signs and symptoms of *Greeva Hundanam*.
- ❖ Subjective parameters like pain, stiffness and neck disability index have highly significant relief in both the groups at the level  $P < 0.001$ . And not significant improvement was found in objective criteria like flexion, extension, right lateral flexion, left lateral flexion, right rotation at the level of  $P > 0.05$ , Significant improvement were found only in left rotation  $P < 0.05$ .
- ❖ Intergroup comparison of group TTGB and group MTGB show statically significant difference in



pain, stiffness, neck disability index  $P < 0.05$ . Flexion, extension, right lateral flexion, left lateral flexion and right rotation at the level of ( $P > 0.05$ ) and significant difference were found only in left rotation at the level  $P < 0.05$ .

- ❖ So  $H_3$  is accepted.  $H_3$  – Both *Greeva Basti* and its modified schedule *Greeva Basti* have significant effect with *Tila Taila* in *Greeva Hundanam* (Cervical Spondylosis)

**Source of Support: Nil**

**Conflict of Interest: None Declared**

How to cite this URL: Sreejith. J. R & VikramKumar: A Comparative Study On Greeva Basti And Its Modified Schedule In Greeva Hundanam With Tila Taila. International Ayurvedic Medical Journal {online} 2020 {cited July, 2020} Available from: [http://www.iamj.in/posts/images/upload/3877\\_3885.pdf](http://www.iamj.in/posts/images/upload/3877_3885.pdf)

## REFERENCES

1. Agnivesa, Charaka Samhitha with Ayurveda Deepika commentary of Chakrapani Datta, edited Vaidya Jadavji Trikamji Acharya, published by Chaukhamba Surabharati Prakashan Varanasi, reprinted (2011), Sutrasthana 22:11 pp :120.
2. Panchakarma illustrated by Dr.G.Shrinivasa Acharya Published by Chaukhamba Sanskrit Pratishthan, reprinted (2015) pp:259
3. Acharya JT.Charaka Samhitha by Agnivesa with Ayurveda Deepika teeka of Chakrapanidatta. Reprinted (2011), Published by Chaukhambha Orientalia Varanasi.Vol. IV pp 694-95
4. M.Monier Williams,A sanskrit english dictionary published by parimal publication,first new recomposed edition (2008) pp 549.
5. Agnivesa,Charaka Samhitha with Ayurveda Deepika commentary of Chakrapani Datta, edited Vaidya Jadavji Trikamji Acharya, published by Chaukhamba Surabharati Prakashan Varanasi, reprinted (2011), Chikitsasthana 28:22 pp 617.
6. Harrison's Principles of Internal Medicine edited by Anthony.S.Fauci,Eugene Braunwald,Dennis L.Kasper, Stephen L. Hauser, Dan L.Longo,j. Larry Jameson, Joseph Loscalzo, Jameson Vol-17<sup>th</sup> edition Reprint 2008,Vol-1Page No.116
7. Davidson's Principles And Practices of Internal Medicine 19<sup>th</sup> edition, by Churuchil Livingston, Narcourt Brace and Company Ltd. Page No.1189
8. BMJ.2007 Mar 10;334(7592):527-531.doi 10.1136/bmj.3917.60299.80. Article. Allan I Binder, Consultant Rheumatologist Copy right BMJ Publishing Group Ltd 2007
9. Bhavaprakasa of Bhavamisra Commentary by Dr. Bulusu Sitaram, Published By Chaukhambha Orientalia Varanasi. Vol-1, Chapter-6 (Taila varga), PP.541