



ISSN 2456-3110

Vol 4 · Issue 5

Sept-Oct 2019

Journal of **Ayurveda and Integrated Medical Sciences**

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences



Charaka
Publications

Indexed

An open label single arm prospective clinical study on *Vatagajankusharasa* with *Pippali Churna* and *Manjishta Kwatha* as *Anupana* in *Gridhrasi* (Sciatica)

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ABSTRACT

Background - Low backache is the 2nd most common reason for all physician visits and it is a condition that affects as many as 80-90% of people during their life time.^[1] Sciatica is a relatively common condition with a life time incidence varying from 13-40%. *Gridhrasi* in Ayurveda is a *Rujapradhana Nanatmaja Vatavyadhi*, which has similar presentation of sciatica intervenes with the functional ability of low back and lower limbs. *Vata Gajankusha Rasa* is a potent medicinal preparation, which in classics have mentioned can cure severe form of *Gridhrasi* in a week. The present study is taken up with the hypothesis that *Vata Gajankusha Rasa* with *Manjishta Kwatha* and *Pippali Churna* as *Anupana* would be effective in the management of *Gridhrasi*. **Objective** - To evaluate the effectiveness of *Vatagajankusha Rasa* with *Pippali Churna* and *Manjishta Kwatha* as *Anupana* in the management of *Gridhrasi* (sciatica). **Method** - Among 40 registered patients 36 of them completed the course of treatment. They were administered with *Vatagajankusha Rasa* (125mg) twice daily with *Pippali Churna* (3grams) and *Manjishta Kwatha* (15ml) as *Anupana* before food for a period of 7 days. For statistical analysis subjective and objective parameters were assessed by Wilcoxon signed rank and McNemar test. **Result** - In the parameters of *Gridhrasi*, the medicine was found to be statistically significant in relieving the assessment parameters like *Ruk*, *Toda*, *Sthambha*, *Aruchi*, *Gourava* ($p < 0.001$). In Objective parameters like SLR and Lessagues test, significant relief was observed after statistical analysis. **Conclusion** - *Vatagajankusha Rasa* with *Pippali Churna* and *Manjishta Kwatha* as *Anupana* is effective in the management of symptoms of *Gridhrasi*.

Key words: *Gridhrasi*, *Lowback Ache*, *Sciatica*, *Vata Gajankusha Rasa*, *Pippali*, *Manjishta*.

INTRODUCTION

Gridhrasi, one among 80 *Vataja Nanatmaja Vyadhis* is characterized by *Stambha*, *Ruk*, *Toda*, *Spandana*; initially affect *Spik*, *Kati* and then gradually radiates

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Submission Date: 02/09/2019 Accepted Date: 07/10/2019

Access this article online

Quick Response Code



Website: www.jaims.in

DOI: 10.21760/jaims.4.5.4

to posterior aspects of *Uru*, *Janu*, *Jangha* and *Pada*.^[2] Two types of *Gridhrasi*, *Vataja* and *Vatakaphaja* can be seen, in *Vatajagridrasishoola*, *Sthamba* and *Thoda* are prominent symptoms while in *Vata-Kaphajagridrasi* there will be more of *Tandra*, *Gaurava* and *Arochaka*.^[3] In *Gridhrasi Lakshanas* like '*Sakthi Utkshepam Nigruhnati*' and gait similar to '*Gridha*' not only depicts the difficulty in walking, but also inflicts the severity of pain.^{[4],[5]}

This condition is clinically very similar to sciatica, which is a condition where there is distribution of pain along the course of sciatic nerve i.e., radicular pain from low back to foot.^[6]

In this disease, mainly *Apana Vata*^[7] and *Vyana Vata*^[8] vitiation are observed, but most of the times *Kapha* remains as associated *Dosha*. So for, treatment of

Gridhrasi, drug of choice should have *Vata - Kaphashamana, Dipana - Pachana* and *Shulaprashamana* properties.

Vatagajankusha Rasa is a combination of *Vyosha, Rasa Bhasmas, Vatsanabha, Karkatasringi, Haritaki* etc. Of which *Shunti, Maricha, Pippali* has *Deepana, Aamapachana* action and improves the digestion. *Vatsanabha* has the property of *Vikasi, Vyavayi, Yogvahi. Haritaki, Agnimantha, Karkatashringi* works as *Deepana, Vatanulomaka, Kaphanisaraka, Vatashamaka. Rasa-Bhasma's* improves *Agni* and acts as *Balya, Rasayana, Vatapradhana Tridosha Shamaka*. So it will be very effective in *Vatavyadhis*.^[9]

Here the study was taken to find out the effectiveness of *Vatagajankusha Rasa* with *Manjishta Kwatha* and *Pippali Churna* as *Anupana* in the management of *Gridhrasi (Sciatica)*.

OBJECTIVE OF THE STUDY

To evaluate the efficacy of *Vatagajankusha Rasa* with *Pippali Churna* and *Manjishta Kwatha* as *Anupana* in the management of *Gridhrasi (Sciatica)*

MATERIALS AND METHODS

Source of data

Patients who attended the out-patient department of Kayachikitsa at Sri Dharmasthala Manjunatheswara College of Ayurveda and Hospital, Hassan.

Method of collection of data

49 patients (Table 1) were screened and selected based on the screening form prepared. Data was collected using specially prepared case report form. The demographic details of 40 enrolled patients of *Gridhrasi* such as age, gender, educational status etc. are represented in table below (Table 1).

Table 1: Demographic detail of 40 patients of Sciatica

Geographic Observation	Predominance	No of Patients (%)
Age	31-40	12 (30%)
Gender	Male	22 (55%)

Marital status	Married	33 (82.5%)
Educational status	Middle school	18 (45%)
Occupation	Agriculture	12 (30%)

The observations related to the disease details of the 40 patients of *Sciatica* are represented in table below (Table 2)

Table 2: Observations related to disease of 40 patients of Sciatica

Parameter	Observation	No of Patients (%)
<i>Stambha</i>	Present	37 (92.5%)
<i>Ruk</i>	Present	40 (100%)
<i>Toda</i>	Present	40 (100%)
<i>Spandana</i>	Present	36 (90%)
<i>Gaurava</i>	Present	20 (50%)
<i>Arochaka</i>	Present	9 (22.5%)
<i>Tandra</i>	Present	6 (15%)
Duration	Chronic	19 (47.5%)
H/O trauma to LS	Present	6 (15%)

Diagnostic criteria

Diagnosis was made on the basis of *Samanya Lakshanas* of *Gridhrasi* viz. *Stambha, Ruk, Toda* and *Spandana* starting from *Sphika* and extend through *Kati, Prishta, Uru, Janu, Jangha, Padam* in an order and on the basis of symptoms of *sciatica*.

Inclusion criteria

1. Positive Straight Leg Raising test (30 to 70 degree)
2. Patients aged between 20-70 years
3. Patients of either gender irrespective of caste, creed and religion
4. Patients who are willing to participate and sign the informed consent form

Exclusion criteria

1. Uncontrolled Diabetes Mellitus and Hypertension
2. Systemic disorders like Chronic Heart Disease, Chronic Renal Failure, Chronic Liver Disease
3. History of HIV, HbSAg, Carcinoma
4. Pregnant woman and lactating mother
5. History of major trauma causing fractures of pelvis and femur
6. Surgical indications such as progressive neurological deficit

Ethical clearance

Ethics clearance was obtained from Institutional Ethics Committee before initiation of the study (IEC No: SDM/IEC/17/2017-2018).

Study design

The study was open label, single arm, exploratory, prospective clinical on 30 patients of Sciatica selected using the convenience/ purposive (non-random) sampling technique with pre and post test design conducted in a tertiary Ayurveda hospital attached to quarters in southern India.

Intervention

Medicines - *Vatagajankusha Rasa* with *Pippali Churna* and *Manjishta Kwatha* as *Anupana*.

Source and authentication of drug

- *Vatagajankusha Rasa* (125mg each) tablets were purchased from VIRGO Pharmacy, Gujarat, which is a GMP certified pharmacy.
- Powdered *Pippali* was purchased from Sri Dharmasthala Manjunatheswara College of Ayurveda and Hospital pharmacy, Udupi, which is a GMP certified pharmacy.
- Raw drugs for *Manjishta Kwatha* were procured from Kajrekar pharmacy, Belagavi and were authenticated at Dravyaguna department of Sri Dharmasthala Manjunatheswara College of Ayurveda and Hospital, Hassan.

Method of preparation of *Manjishta Kwatha*

Roots of *Manjishta* were cleaned and dried. They were coarsely powdered, weighed as per formula and then mixed well. 4 parts of water was added to 1 part of *Manjishta* coarse powder, boiled and reduced to 1/4th part. Prepared *Kwatha* was packed in 210 ml bottles and labeled with name of the drug, reference, details of the manufacturer, batch number.

Treatment plan

Vatagajankusha Rasa tablet of 125mg after food with 3gm *Pippali Churna* and 15ml *Manjishta Kwatha* as *Anupana* twice daily.

Duration: 7 days

Assessment Criteria**Primary outcome measures**

- *Samanya Lakshanas* of *Gridhrasi* like *Stambha*, *Ruk*, *Toda*, *Spandana*, *Tandra*, *Gauravata*, *Arochaka*
- Symptoms of sciatica

Secondary outcome measures

- Gait
- Straight leg raising Test (goniometry)
- Lassegues sign

Table 3: Assesment criteria (self assessed scale)

SN	Subjective Parameter	Grade	Assessment
1.	<i>Sthambha</i>	0	No stiffness
		1	With up to 25% impairment in the range of movement of joint
		2	With 25-50% impairment in the range of movement of joints
		3	With 50-75% impairment in the range of the movement of joints
		4	With more than 75% impairment in the range of movements of the joints
2.	<i>Ruk</i> - VAS	0	No pain - Scale reading 0

		1	Mild pain - Scale reading >0-3 (Mild pain complained by patient when asked)
		2	Moderate pain - Scale reading >3-6 (Patient frequently complained of pain and has painful look)
		3	Severe pain - Scale reading >6-10 (Excruciating pain associated with painful cries and agonizing look)
3.	Toda	0	No pricking sensation
		1	Mild pricking sensation sometimes
		2	Frequent pricking sensation
		3	Severe pricking sensation all the time
4.	Spandana	0	Absent
		1	Present
5.	Gowrava	0	No heaviness
		1	Occasionally
		2	Daily and high in frequency but not persistent
		3	persistent
6.	Arochaka	0	No complains
		1	1-2 times weekly complains of no desire to eat anything
		2	3-4 times weekly complains of no desire to eat anything
		3	Always complains of no desire to eat anything
7.	Tandra	0	Absent
		1	Present
8.	SLR (Straight Leg Rising)	0	SLR 90 degrees
		1	SLR 70-90 degrees

		2	SLR 50-70 degrees
		3	SLR 30-50 degrees
		4	SLR 0-30 degrees
9.	Lasegue's Sign	0	absent
		1	present
10.	Tenderness	0	No tenderness
		1	Subjective experience of tenderness
		2	Wincing of face on expression
		3	Wincing of face and withdrawal
		4	Do not allow to touch
		1	Abnormal

OBSERVATIONS AND RESULTS

Total 40 patients of *Gridhrasi* were registered for the study; out of which 4 were dropout and rest 36 patients completed the study. The effectiveness of the therapy in those 36 patients are being shown here under the separate headings.

Statistical analysis was done using SPSS VER. 23 using Wilcoxon signed rank test and McNemar test

Table 4: Results of Wilcoxon signed rank test showing the effect of therapy.

Parameter	Negative ranks			Positive ranks			Ties	Total	Z value	P value
	N	M	SR	N	M	SR				
Stambha Rt BT-AT	17	9.00	15.30	0	0.00	0.00	19	36	-3.827	.000*
Stambha Lt BT-AT	19	10.50	19.50	1	1.50	10.00	16	36	-4.025	.000*
Ruk Rt	19	10.00	19.00	0	0.00	0.00	17	36	-4.3	.000*

BT-AT		0	0		0				59	
Ruk Lt	1	6.	78.	0	0.	0.0	2	36	-	.001
BT-AT	2	50	00	0	0	0	4		3.4	*
									64	
Toda Rt	1	9.	14	1	8.	8.5	1	36	-	.000
BT-AT	6	03	4.5	0	5	0	9		3.5	*
			0		0				78	
Toda Lt	8	4.	36.	0	0.	0.0	2	36	-	.000
BT-AT		50	00	0	0	0	8		2.7	*
									14	
Gaura va Rt	6	3.	21.	0	0.	0.0	3	36	-	.014
BT-AT		50	00	0	0	0	0		2.4	*
									49	
Gaura va Lt	6	3.	21.	0	0.	0.0	3	36	-	.014
BT-AT		50	00	0	0	0	0		2.4	*
									49	
Arocha ka AT-BT	6	3.	21.	0	0.	0.0	3	36	-	.020
		50	00	0	0	0	0		2.3	*
									33	
ASLR Rt BT-AT	2	12	26	1	1	11.	1	36	-	.000
	2	.0	4.5	0	1.	50	3		4.3	*
		2	0		5				15	
ASLR Lt BT-AT	1	9.	17	0	0.	0.0	1	36	-	.000
	8	50	1.0	0	0	0	8		4.2	*
			0		0				43	
PSLR Rt BT-AT	1	10	19	0	0.	0.0	1	36	-	.000
	9	.0	0.0	0	0	0	7		4.2	*
		0	0		0				64	
PSLR Lt BT-AT	1	9.	16	1	8.	8.0	1	36	-	.000
	7	59	3.0	0	0	0	8		3.6	*
			0		0				26	
Tenderness Rt BT-AT	2	10	21	0	0.	0.0	1	36	-	.000
	0	.5	0.0	0	0	0	6		4.4	*
		0	0		0				72	
Tenderness Lt BT-AT	1	9.	16	1	9.	9.5	1	36	-	.000
	7	50	1.5	0	5	0	8		3.7	*
			0		0				71	
* - Significant										

Table 5: Results of McNemar test showing the effect of therapy.

Parameter	BT		AT		N	P value	Remarks
	Present	Absent	Present	Absent			
Spandana Rt BT-AT	25	11	11	25	36	.000	S
Spandana Lt BT-AT	10	26	5	31	36	.063	NS
Tandra	5	31	0	36	36	.063	NS
Lassegue test Rt BT-AT	26	10	17	19	36	.004	S
Lassegue test Lt BT-AT	18	18	7	29	36	.001	S

DISCUSSION

Statistically significant improvements were observed in the primary and secondary outcome measures with administration of *Vatagajankusha Rasa* with *Pippali Churna* and *Manjishta Kwatha* as *Anupana*. Assessment of these parameters was done after 7 days of treatment.

Stambha was manifested as a result of *Vataprakopa* and *Sheetaguna*. *Vata* due to its *Ruksha* and *Kharaguna* produce dryness and decreases *Snigdha* and *Shlakshnata (Shleshaka Kapha)* in *Mamsa Dhatu*, which is essential for proper contraction and relaxation of muscles. Ingredients of *Vatagajankusha Rasa* like *Rasasindhura*, *Lohabhasma*, *Swarnamakshika*, *Gandhaka*, *Vatsanabha*, *Tankana*, *Trikatu* etc. with the *Bhavana* of *Nirgundi* and *Mundi Swarasa* makes the drug more potent against *Vata* and *Kapha* disorders. *Shudha Haratala*, *Shunti*, *Pippali* act as *Vatashamaka*, due to its *Ushnavirya* and *Snigdha Guna*, which might have reduced the *Stambha*.

Ruk and *Toda Lakshanas* were manifested as a result of *Prakopa* of *Vyanavata* and *Apana Vata* and *Sleshaka Kapha* due to *Nidanas* like *Atibharavahana*, *Vishama Cheshta* and *Divaswapna*. *Bhasmas*, *Hareetaki*, *Karkatasringi* in *Vatagajankusha Rasa* are *Vatashamaka Dravyas*. *Pippali*, *Maricha* and *Shunti* are *Shoola Prashamana Dravyas*. *Vatsanabha* is *Kaphavatahara* and *Rujapaha*. *Manjistha Kashaya* helps in pacifying the *Prakupitavata* due to its *Ushnaviryas* and *Madhura Rasa*. *Pippali Manjishta Vatsanabha* have analgesic activity due to glycosides, alkanoids and other bio active compounds present in them and helps in reducing the pain.^{[10],[11]}

Sanga of *Vata* and its increased *Chalaguna* can be held responsible for localised pulsations (*Spandana*). *Vatagajankusha Rasa* containing *Vatahara* drugs like *Hareetaki* and *Vatsanabha* having *Ushnalaghu Guna* might have removed *Sanga* by *Vata Anulomana*. *Manjishta* and *Shunti* acts as *Srotoshodhaka* and *Raktaprasadaka*.

Tandra is a *Kaphaja Lakshana* seen in *Gridhrasi*. *Vatagajankusha Rasa* containing *Lohabhasma*, *Tankana*, *Pippali*, *Shunti*, *Karkatasringi* on administration does *Kaphaharana* and reduces *Tandra*.

Gourava was manifested due to the *Guru Guna* predominantly found in *Kapha Dosha*. *Aruchi* is a *Kaphajananathmaja Vyadhi*. *Vatagajankusha Rasa* contains *Shunthi* and *Pippali* having *Laghuguna* and *Ushnaveerya*, helps in *Kaphahara* property. *Haritaki*, *Agnimantha*, *Karkatashringi* works as *Deepana*, *Vatanulomaka*, *Kaphanissaraka* and *Vatashamaka*. *Rasa Bhasmas* increases the *Agni*. *Manjisthakashaya* having *Rukshaguna*, *Ushnaviryas*, *Katuvipaka* reduced *Gourava* and *Arochaka*. *Pippali Churna* having *Katu Rasa* and *Ushnaviryas* did *Kaphaharana* and reduced above symptoms.

Reduction in the degree of SLR was manifested as a result of *Vyana Vata* vitiation, due to *Prakupita Kapha Dosa*. The *Prakopa* of *Kapha Dosha* was caused due to *Guru Guna*. The combination of *Rasa Oushadhis* in *Vatagajankusha Rasa* acts as *Vatapradhana Tridosahara*. *Karkatasringi*, *Haritaki*, *Agnimantha*

works as *Agnideepaka*, *Vatanulomaka*, *Kaphanissaraka* and *Vatashamaka*. Another cause for reduction in SLR is the *Shoshana* of *Sira* and *Snayu*. These are the *Upadhatus* of *Raktadosha*. *Manjishta* is *Raktaprasadaka* which nourishes the *Rakta* and its *Upadhatus* and improves the blood circulation. *Manjishta* being *Pitta-Kapha Shamaka*, can counteract the *Pitta* or *Kaphaanubandha* with *Vata*. Movements of the lower limbs are improved by *Bhasmas* and drugs like *Pippali*, *Haritaki*, *Vatsanabha* having *Balya*, *Rasayana* property by promoting *Dhatu Poshana*.

Tenderness was manifested as a result of *Raktadusti* and *Vataprakopa*. *Manjistha Kashaya* having *Madhuratikta Rasa* and *Ushna Virya* did *Sroto Shodhana* and *Rakta Prasadana*. Drugs Like *Hareetaki*, *Vatsanabha*, *Shunti*, *Pippali* in *Vataganjankusha Rasa* are having *Vatahara*, *Vedanasthapana* properties, which might have acted on tenderness.

Discussion on mode of action of drug

Vatagajankusha Rasa is a combination of *Rasa Aushadhis* like *Rasa Sindhura*, *Lohabhasma*, *Swarnamakshika Bhasma*, *Gandhaka*, *Haratala*, *Tankana* and *Dravyas* like *Haritaki*, *Karkatasringi*, *Vatsanabha*, *Shunti*, *Pippali*, *Agnimantha* with *Bhavana* in *Nirgundi Swarasa* and *Mundi Swarasa*. This combination of *Rasa Oushadhis* acts as *Vatapradhana Tridosahara*. They increase the *Jataragni* and works as *Balya* and *Rasayana*.

After *Marana*, *Rasa Bhasmas* become microfine particles. They get easily absorbed into the body along with *Rasa Dhatu* and provides nourishment to the body. After *Marana* the particle size of *Bhasma* reduces into the size of "platelets" (1.5 µm) and it can be absorbed through the gap junctions and epithelial tissues in middle gut. Particles penetrate the intestinal barrier either by endocytosis, phagocytosis or persorption and transit to the blood stream.^[12]

Pippali, *Maricha*, *Shunti* are *Shoolaprashamana Dravyas*. They improve digestion by *Deepanapachana Karma* and thereby improves the overall nourishment of the body. *Vatsanabha* is *Kaphavatahara* and *Rujapaha*. It has *Vikasi*, *Vyavayi*, *Yogvahi Guna* makes it easy to reach the cellular level. *Karkatasringi*,

Haritaki, Agnimantha work as Agnideepaka, Vatanulomaka, Kaphanisaraka and Vatashamaka. Nirgundi, Agnimantha, Lauha Bhasma, Shudha Gandhaka and Tankana Bhasma act as Shothahara. Shunti acts as Srotoshodhaka and Raktaprasadaka. Pippali, Manjishta, Vatsanabha have analgesic activity due to glycosides, alkanoids and other bio active compounds present in them and helps in reducing the pain.

Pippali Choorna due to its Katu Rasa, Laghu Snigdha Guna and Madhura Vipaka acts as Deepaka, Vatanulomaka, Balya, Rasayana; improves the Jataragni and nourishes the body.

Manjishta Kwatha is having Tikta Rasa, Ushna Guna and Katu Vipaka. It's Raktaprasadaka action improves the blood circulation and it is Srotoshodhaka.

Thus Vatagajankusha Rasa with Pippali Churna and Manjishta Kwatha Anupana acts as Vata Pradhana Tridosha Shamaka, Deepaka, Pachaka, Shothahara, Srotovishodhaka, Raktaprasadaka, Balya and Rasayana.

CONCLUSION

Vatagajankusha Rasa contains the main ingredients like Rasa Sindhura, Loha bhasma, Swarnamakshika Bhasma, Shunthi, Pippali, Vatsanabha etc. and hence acts on Vata and Kapha Dosha which shows its action on both variants of Gridhrasi. Vatagajankusha Rasa with Pippali Churna and Manjishta Kwatha as Anupana showed marked effect on the signs and symptoms of Gridhrasi - Ruk, Toda, Stambha, Gourava and Aruchi. Medicines showed marked effect on objective parameters of Gridhrasi like - Straight leg raising test and lassegues test. Range of movements of lumbar spine showed significant improvement after treatment. Vatagajankusha Rasa orally in the dose of 125 mg twice daily with Pippali Churna (3gm) and Manjishta Kwatha (15ml) as Anupana for 7 days is effective in Gridhrasi.

REFERENCES

1. Dennis L Kasper, Eugene Braunwald, Anthony S Fauci et al : Harrison's principal of Internal Medicine, 14th chapter 19th edition – 2016 published by McGraw-Hill Medical Publishing Division, Page no. 1002-7
2. Acharya JT, editor. Charaka Samhita of Agnivesha, Sutrasthana, Ch. 20, Ver. 11. 4th ed. Varanasi: Chaukhambha Surbharati Prakashana; 1994. p. 113.
3. Acharya JT, editor. Charaka Samhita of Agnivesha, Chikistasthana, Ch. 28, Ver. 56-57. 4th ed. Varanasi: Chaukhambha Surbharati Prakashana; 1994. p. 619.
4. Paradakara HSS, Ashtanga Hrudayam with Sarvanga Sundaram commentary of Arunadutta and Ayurveda Rasayana of Hemadri. Nidana Sthana 15/54. 10th ed. Varanasi (India): Chaukhambha Orientalia; 2014. P.535
5. Acharya JT, editor. Sushruta Samhita of Sushruta, Nidanasthana, Ch. 1, Ver. 74. 4th ed. Varanasi: Chaukhambha Prakashana; 1980. p. 268.
6. www.wikipedia.org/wiki/Sciatica browsed on 10/12/2015, 2.30pm.- Valat JP; Genevay, S; Marty, M; Rozenberg, S; Koes, B (April 2010). Sciatica best practice and research. Clinical rheumatology.
7. Paradakara HSS, Ashtanga Hrudayam with Sarvanga Sundaram commentary of Arunadutta and Ayurveda Rasayana of Hemadri. Sutra Sthana 12/9. 10th ed. Varanasi (India): Chaukhambha Orientalia; 2014. P.193.
8. Paradakara HSS, Ashtanga Hrudayam with Sarvanga Sundaram commentary of Arunadutta and Ayurveda Rasayana of Hemadri. Sutra Sthana 12/7. 10th ed. Varanasi (India): Chaukhambha Orientalia; 2014. P.193.
9. Verma A, A.K. Singh - A clinical & comparative study of vatgajankushras and sallaki tablet in the management of Gridhrasi with special reference to sciatica - International ayurvedic medical journal, (issn:2320 5091) (february, 2107) 5 (2).
10. G Vedhanayakai, Indian journal of experimental biology, vol 41, june 2003, pp649-651
11. Anarpatel, Journal of pharmaceutical science and research, vol 2 (12), 2010, 809-813
12. C.B. Jha, B. Bhattacharya, K.K. Narang, Bhasmas as natural nano-robots: the bio relevant metal complex. J. Tradt Nat Med; 1(1): 2-9

How to cite this article: Dr. Vishnu M L, Dr. Vasantha B, Dr. Totad Muttappa, Dr. Yadu Gopan, Dr. Moh Gulfam. An open label single arm prospective clinical study on Vatagajankusharasa with Pippali Churna and Manjishta Kwatha as Anupana in Gridhrasi (Sciatica). J Ayurveda Integr Med Sci 2019;5:11-17.
<http://dx.doi.org/10.21760/jaims.4.5.4>

Source of Support: Nil, **Conflict of Interest:** None declared
