WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 18, 1112-1123. Research Article ISSN 2277–7105

COMPARATIVE EVALUATION OF *AGNIKARMA* AND *SHIVA GUGGULU* IN *GRIDHRASI* (SCIATICA)

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Article Received on 15 August 2026,
Article Revised on 05 Sept. 2026,
Article Published on 16 Sept. 2026,

https://doi.org/10.5281/zenodo.22810957

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How to cite this Article: Dr. Akansha Negi[1]*, Dr. Vimal Kumar[2], Dr. Ajay Kumar Gupta[3]. (2026). "Comparative Evaluation of Agnikarma and Shiva Guggulu in Gridhrasi (Sciatica)". World Journal of Pharmaceutical Research, 15(18), 1112–1123.

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ABSTRACT

Gridhrasi is one of the eighty *Nanatmaja Vatavyadhi* mentioned in various *Ayurvedic* texts, caused by the vitiation of *Vata Dosha*. One of the most common symptoms of *Gridhrasi* is *Ruka* (low back pain of radiating type), and its incidence has increased over time as a result of the human being's changing lifestyle. On the basis of its symptoms, it can be compared with *sciatica* in allopathic science, and its treatments mainly aim at relieving pain, using analgesics, muscle relaxants, or physiotherapy, and even surgery in certain cases, and all these carry some side effects. The present clinical study evaluated the efficacy of *Agnikarma Mrittika Shalaka* and *Shiva Guggulu* (orally) in 34 patients aged 35-70 years. Group A patients were treated with *Agnikarma* using *Mrittika Shalaka* at the most tender points in Lumbar region, while Group B were treated with *Shiva Guggulu* orally twice daily with lukewarm water. The therapeutic effect was assessed on the basis of subjective and objective parameters, which include *Ruka*, *Stambha*, *Aruchi*, *Spandana*, *Gaurava*, and SLR. Both groups showed significant improvement in all the parameters and no adverse effects were reported during or after the completion of treatment. The study results indicate that both treatment modalities are safe and effective for the management of *Gridhrasi*.

KEYWORDS: *Gridhrasi, Agnikarma, Mrittika Shalaka,* and *Shiva Guggulu.*

INTRODUCTION

Ayurveda means "science of life". It is one of the oldest holistic healing systems in the world. *Shalya Tantra* is one of *Ayurveda's Ashtanga* (Eight branches) that is gaining popularity among the common people. According to *Ayurveda* any imbalance in the normal state of *Tridosha* (i.e., *Vata, Pitt*a, and *Kapha*) is responsible for the manifestation of all the disorders, among them *Vata* is considered supreme as it is responsible for all the movements in our body including movements of other *Dosha*, *Dhatu*, and *Mala*.[1] In *Gridhrasi*, also there is a dominance of *Vata Dosha*, responsible for causing pain in the lower back (one of its main presenting complaints). In the present-day world, every human being is busy securing their future in desire to live a happy and comfortable life, and in doing that they spend less time on caring for their health. The incidence of Low backache (main presenting complaint in sciatica) is increasing very fast nowadays owing to an increase in busy professional and social life, improper posture while doing daily routine works, in offices, continuous overexertion, and jerky movements during travelling and sports, all these factors create undue pressure on the spinal cord and play an important role in producing low backache and pain radiating down the leg. LBP (low back pain) has profound effects on well-being and is often a cause of significant physical and psychological health impairments.

Gridhrasi mentioned in *Ayurvedic* literature, is a *Ruka Pradhan Vyadhi*, which is included under Eighty types of *Nanatmaja Vatavyadhi* described by *Acharyas*.[2] The word *Gridhrasi* is derived from the Sanskrit word '*Gridhra'* which is the name of a bird i.e., Vulture.[3] The name is given because the patient suffering from this disease walks like a Vulture. Although in all *Ayurvedic* texts, there is no direct reference mentioned regarding the *Nidana* of *Gridhrasi*, being a *Vataja Nanatmaja Vyadhi*, general *Vata Prakopaka Hetus*.[4] should be considered as its causative factors. *Acharyas* have described its two types i.e., *Vataja* and *Vata-Kaphaja*. *Gridhrasi* is characterized by the onset of *Ruka* (pain), *Toda* (pricking pain), *Stambha* (stiffness), *Spandana* (pulsation) initially in *Sphika* (buttock) and then radiating distally to the posterior aspect of *Kati* (waist), *Prishtha* (back), *Uru* (thigh), *Janu* (knee), *Jangha* (calf) up to *Pada* (foot).[5] Along with these symptoms, specific features like *Bhaktadvesha, Gaurva, Tandra, Aruchi,* and *Mukhaprasheka* are also described by Acharyas for the *Vata-Kaphaja* type of *Gridhrasi*.

Gridhrasi is equated with Sciatica in allopathic science. According to the Johns Hopkins University, sciatica refers to pain, numbness, and tingling sensation in lower limbs resulting from injury or compression of the sciatic nerve. The sciatic nerve pain originates from the lower back and radiates towards the buttocks, back of thighs, knee, and calf up to the foot along its path. In modern science, the goal of treatment is mainly symptomatic (aims at relieving pain) using analgesics, muscle relaxants or physiotherapy, and even surgery in certain cases. All these have their own complications and side effects. So, there is no safe and cost-effective treatment for sciatica. Whereas, in *Ayurveda*, various treatment modalities are available for the treatment of *Gridhrasi* (Sciatica) which are very easy to use, cost-effective, safe and carry no side effects. Although, *Acharyas* have described the treatment of *Gridhrasi* in brief, being a *Vata Nanatmaja Vikara* various procedures described for the treatment of *Vatavyadhi* can be safely used for its treatment as follows

- *Bheshaja* (various oral formulations like *Churna*, *Guggulu*, etc.)
- *Marma Chikitsa*
- *Swedana* (Fomentation)
- *Snehana* (Oleation, internal and external)
- *Raktamokshana* (Therapeutic bloodletting)
- *Agnikarma*
- *Basti* (Therapeutic medicated enema).

Among these, *Agnikarma* is a well-known para-surgical procedure. *Agnikarma* is found to be more beneficial, mainly indicated in vitiated *Vata* affecting muscles, joints and bones associated with pain.[6] According to *Acharya Charaka*, *Gridhrasi* is caused predominantly due to vitiation of *Vata* and *Kapha dosha*. *Agnikarma* specially works on the aggravated *Vata* and *Kapha dosha*. Those diseases that are not cured by *Bheshaja*, *Shastra*, and *Kshara*, are relieved by *Agnikarma* without recurrence.[7] *Agnikarma* is a non pharmocologial treatment (para-surgical) which has definite role in treating *Gridhrasi*. As per modern, *Agnikarma* therapy can be termed as “Therapeutic Burn”. It is a therapeutic application of heat which is done by various *Dahanaupkaranas* according to site and disease condition.[8]

Agnikarma is an efficient therapeutic modality in *Gridhrasi*. So, keeping all these points in mind, *Agnikarma* using *Mrittika Shalaka* was done in Group A. Along with these procedures, many formulations have been described by *Acharyas* for the treatment of *Gridhrasi* (Sciatica) and among these, many are directly indicated for the treatment of *Gridhrasi* (Sciatica).

Among them, *Shiva Guggulu* is mentioned in *Rasendrasarsangraha* in the *Aamvat Chikitsa Adhyay.*[9] As in *Gridhrasi* (Sciatica) mainly *Vata* and *Kapha Doshas* are vitiated, and most of the ingredients of *Shiva Guggulu* are having *Tikta Rasa*, *Ushna Virya*, *Madhura Rasa* and *Katu Vipaka*, it is especially helpful for stabilizing *Vata* and *Kapha Dosha* imbalances without aggravating *Pitta*. In this study. 34 diagnosed cases of *Gridhrasi* were randomly assigned into two equal groups of 17 patients each using a computer- generated randomisation table. Group A were treated with *Agnikarma* using ***Mrittika Shalaka*** (*Krishna Mrittika*).[10] and Group B were treated with ***Shiva Guggulu*** (Orally).

AIM

To compare the efficacy of *Agnikarma* and *Shiva Guggulu* (orally) in the management of *Gridhrasi* (Sciatica).

OBJECTIVES

1. To explore the literature regarding *Agnikarma* and *Gridhrasi* (Sciatica) in *Ayurvedic* and modern text.
2. To evaluate the effect of *Agnikarma* by *Mrittika Shalaka* in management of *Gridhrasi* (Sciatica).
3. To evaluate the effect of *Shiva Guggulu* in management of *Gridhrasi* (Sciatica).
4. To provide cost effective and safe treatment for the patients of *Gridhrasi* (Sciatica).

MATERIALS AND METHODS

SELECTION OF PATIENTS

Patients with classical signs and symptoms of *Gridhrasi* (Sciatica) attending the OPD and IPD (not medical camps) of Shalya Tantra department of Rishikul Campus, Uttarakhand Ayurved University, Haridwar were selected according to Randomization chart for this clinical study, irrespective of sex, religion, occupation etc. A detailed proforma was prepared on the basis of *Ayurvedic* and allied sciences. A total of 34 patients was selected for the study.

INFORMED CONSENT

The study was explained clearly to the patients in the language they understand and their signed, written, informed consent was taken before starting the clinical trial.

NUMBER OF PATIENTS

Group A	17 patients in this group were treated with *Agnikarma*. Total 4 sittings were given at interval of 7 days for 28 days.

Group B	17 patients in this group were treated with *Shiva Guggulu* (orally). 2 gm per day (2 *gudika* BD) with lukewarm water for 28 days.

SAMPLE SELECTION CRITERIA

A. Inclusion Criteria

- Patients who have classical sign and symptoms of *Gridhrasi.*
- Patients of age group between 35-70 years.
- Willingness of patients for study.

B. Exclusion Criteria

- Uncontrolled Hypertension and Diabetes Mellitus.
- HIV, Hepatitis-B and HCV positive.
- Known malignancy of spine or other organs.
- Known history of spine fracture (trauma).

C. Withdrawal Criteria: - Patients reporting with any of the following:

- Patients willing to quit in between (due to aggravation of symptoms, personal matters, associated illness or any other difficulties).
- Adverse reaction, if any, will be reported to ADR cell immediately, patient will be treated accordingly and will be excluded from the study (No adverse reaction was observed during this clinical study, as well as follow up.

1. **Investigations:** Following investigations were carried out to rule out other associated pathologies

➢ **Blood Examination**

- CBC, ESR, BT, CT.
- RBS
- S. Bilirubin, SGOT, SGPT
- Blood Urea, S. Creatinine
- S. Calcium
- Uric acid
- RA factor.
- HIV, HCV, HBsAg

➢ **Radiological Examination**

- X-ray Lumbo-Sacral spine (Antero-posterior & Lateral view).
- MRI/CT scan - Lumbo-Sacral spine (if needed).

ASSESSMENT CRITERIA

Assessment was done on the basis of subjective and objective parameters, and assessment was carried out on 7 days interval for 28 days i.e. – on 0, 7th, 14th, 21st, 28th day to find out the effect of *Agnikarma* and *Shiva Guggulu* in *Gridhrasi* (Sciatica).

SUBJECTIVE PARAMETERS

1. **Ruka (Pain/Discomfort).**

No pain	0
Mild pain but no difficulty in walking	1
Moderate pain and slight difficulty in walking	2
Severe pain with severe difficulty in walking	3

Mild, Moderate and Severe intensity of pain was assessed on the basis of PAIN ASSESSMENT SCALE: (VAS Visual Analog Score).

2. ***Stambha* (Stiffness).**

No *Stambhata*	0
Stambhata for few minutes after sitting for long duration but relieved by mild movements and routine works are not disturbed.	1
Stambhata lasting for more than 1 hour or many times a day mildly affecting the daily routine.	2
Episodes of *Stambhata* lasting for 2-6 hours daily and daily routines are hampered severely.	3

3. ***Aruchi* (dislike / aversion of food).**

Normal taste in food, feeling to eat food in time	0
Anannabhilasha – not feeling to take food even if hungry	1
Bhaktadvesha – irritability to touch, smell, seeing and listening about food	2
Complete Aversion to food because of anger, stress, etc.	3

4. ***Spandana* (Throbbing / Pulsating).**

No *spandana* at all	0
For few minutes occasionally which is relieved spontaneously	1
Daily at least once for few minutes without affecting daily routine	2
Many times, in a day affecting daily routine	3

5. ***Gaurava* (Heaviness / Lassitude)**

No feeling of *Gaurava*	0
Occasional feeling of *Gaurava* not affecting the normal movements	1

Frequent feeling of *Gaurava* affecting the normal movements	2
Feeling of *Gaurava* throughout the day severely affecting the normal movements	3

OBJECTIVE PARAMETERS Improvement in the Range of Movement was measured by **Goniometer.**

1. SLR Test.

Equal to 90^0 or > 90^0	0
71^0 - < 90^0	1
51^0 - 70^0	2
31^0 - 50^0	3
Equal to 30^0 or <30^0	4

DURATION OF INTERVENTION The duration of treatment was 28 days.

FOLLOW UP- Follow up was done twice, on 14^{th} and 28^{th} day, after the completion of treatment as per of all Subjective and Objective parameters.

OBSERVATIONS AND RESULTS

Analysis of Demographic Data

- Maximum patients were of Age group 35-46 years (44%)
- 17 patients were Male and 17 were female (50 %)
- Maximum patients were Hindu (85.29 %)
- Maximum patients were Married (85.29%)
- Maximum patients belonged to the middle class (82.35 %)
- Maximum patients were Sedentary workers (41.17 %)
- Maximum patients belonged to Urban areas (73.52 %)
- Maximum patients were having a Vegetarian diet (55.88 %)
- Maximum patients were having moderate appetite (47.05%)
- Maximum patients had Irregular bowel habits (73.52 %)
- Maximum patients were having Disturbed sleep (55.88 %)
- Maximum patients did not have a Family history of this disease (91 %)
- None of the patients had a history of Drug allergy
- Maximum patients had *Vata-Kaphaja Prakriti* (61.76%)
- Maximum patients were having *Madhyam Samhanana* (67.64 %)
- Maximum patients were having *Madhyama Satva* (64.70 %)
- Maximum patients had *Vishmashana* type dietic habits (41.17 %)

- Maximum patients were having *Avara Aahara Shakti* (53.13 %)
- Maximum patients were having *Madhyam Vyayama Shakti* (58.82%)
- All patients belonged to the *Madhyamvaya.*

No side effects were reported during and after the study

RESULTS

Statistical Analysis – was done on the basis of p value

- Wilcoxon signed-rank test was applied for Intra- group comparison.
- The Mann-Whitney U test was applied for Inter- group Comparison.

Table No. 1: Effect of Therapy in Group A (Effect of *Agnikarma*).

Group A	Mean		Average of difference	SD of Difference	Z Value	p Value	Result
	BT	AT					
Ruka (pain/discomfort)	2.29	0.52	-1.76	0.43723	-3.872	$p <$ .001	HS
Stambha (stiffness)	2.52	0.35	-2.17	0.52859	-4.1231	$p <$ .001	HS
Aruchi (dislike /aversion of food)	2.52	0.64	-1.94	0.5557	-4.123	$p <$ .001	HS
Spandana (throbbing /pulsating)	2.52	0.52	-2	0.5	-3.8729	$p <$ .001	HS
Gaurava (heaviness/lassitude)	2.29	0.47	-1.82	0.5285	-3.8729	$p <$ .001	HS
SLR test	2.41	0.64	-1.76	0.4372	-3.605	$p <$ .001	HS

Table No. 2: Effect of Therapy in Group B (Effect of *Shiva Guggulu*).

Group B	Mean		Average of difference	SD of Difference	Z Value	p Value	Result
	BT	AT					
Ruka (pain/discomfort)	2.64	0.94	-1.705	1.2397	-3.5939	$p <$ .001	HS
Stambha (stiffness)	2.11	0.70	-1.411	1.927	-3.5619	$p <$ .001	HS
Aruchi (dislike /aversion of food)	1.70	0.35	-1.35	0.812	-3.479	$p <$ .001	HS
Spandana (throbbing /pulsating)	2	0.58	-1.41	0.8335	-3.605	$p <$ .001	HS
Gaurava (heaviness/lassitude)	1.4	0.41	-1.05	0.5231	-3.872	$p <$ .001	HS
SLR test	2	0.82	-1.117	0.7881	-3.316	$p <$ .001	HS

Table No. 3: Comparison between Group A (Agnikarma) and Group B (*Shiva Guggulu*).

Parameters	Group	N	SD	Sum of Ranks	Mann Whitney U	p Value	Result
***Ruka* (pain/ discomfort)**	Group A	17	0.685	318	157	p>0.05	NS
	Group B	17	0.619	285			
	Total	34					
***Stambha* (stiffness)**	Group A	17	0.447	386.5	233.5	p<0.001	HS
	Group B	17	0.619	208.5			
	Total	34					
***Aruchi* (dislike/ aversion of food)**	Group A	17	0.341	371.5	218.5	p<0.05	S
	Group B	17	0.512	223.5			
	Total	34					
***Spandana* (throbbing/pulsating)**	Group A	17	0.5	372.5	219.5	p<0.05	S
	Group B	17	0.512	222.5			
	Total	34					
***Gaurava* (heaviness/lassitude)**	Group A	17	0.574	400	247	p<0.001	HS
	Group B	17	0.342	195			
	Total	34					
SLR test	Group A	17	0.655	384.5	231.5	p<0.001	HS
	Group B	17	0.512	210.5			
	Total	34					

Table No. 4: Percentage effect of Interventional Therapies in both Groups.

Parameters	Effect (%)	
	Group A	Group B
Ruka (pain/discomfort)	82.05%	65.69%
Stambha (stiffness)	86.05%	70.59%
Aruchi (dislike /aversion of food)	76.74%	82.25%
Spandana (throbbing /pulsating)	79.07%	76.47%
Gaurava (heaviness/lassitude)	79.07%	76.47%
SLR test	77.21%	58.82%

DISCUSSION

Agnikarma can be considered as the best therapy for this disease because it mitigates *Vata* and *Kapha Doshas* both. *Ushna, Tikshna, Sukshma* and *Ashukari Gunas* of *Agni* are just opposite to the *Gunas* of *Vata* and *Kapha. Agnikarma* was done by red hot *Mrittika Shalaka*. The physical heat from the red-hot *Shalaka* is directly transferred to the affected part as therapeutic heat to *Twak Dhatu* and produces *Samyak Dagdha Vrana.* Due to *Ushna, Ruksha, Tikshna, Sukshma* and *Ashukari Gunas* of *Agni, Srotovarodha* of the affected part might be cleared and the vitiated *Vata* and *Kapha Doshas* pacified ultimately. The *Rasa Rakta Samvahana* at the site of *Agnikarma* may be enhanced thereby *Mamsadi Dhatus* get the proper nourishment.

Breaking down the process of *Samprapti* is the main step involved in the treatment. The medicines used in our classical system act through multiple pathways to interrupt the process of *Samprapti* (pathogenesis). *Shiva Guggulu* preparations described in our classical texts are meticulously designed, ensuring that the properties of the individual drugs do not conflict with one another. Instead, they interact synergistically, enhancing each other's therapeutic potential in a harmonized and beneficial manner. *Shiva Guggulu* is noted for its effectiveness in conditions such as *Gridhrasi* (sciatica), *Aamvata* (rheumatoid arthritis), *Katishool*[11] (lower back pain), which are all associated with the musculoskeletal system.

- Both the treatment modalities have shown statistically significant result in their respective group.
- Based on the percentage relief, *Agnikarma* has shown satisfactory results in all the parameters i.e- *Ruka, Stambha, Aruchi, Spandana,* and *Gaurava.*
- *Shiva Guggulu* has shown satisfactory results only in terms of *Ruka, Aruchi,* and *Gaurava.*

CONCLUSION

Table No. 5: Overall Effect of Interventional Therapies in both Groups.

Effect	Effect (%)	Frequency	
		Group A	Group B
Unchanged	< 25%	0	0
Mild improvement	25%- < 50%	01	0
Moderate improvement	50%- < 75%	02	13
Marked improvement	75%- < 90%	10	02
Complete cure	90%- 100%	04	02

Group A (*Agnikarma*)

In this group, out of all patients after the completion of treatment, one patient showed mild improvement (25%- <50 % relief in symptoms), two patients showed moderate improvement (50%- < 75% relief in symptoms), ten patients showed marked improvement (75%- <90% relief in symptoms), and four patients got complete relief in signs and symptoms. No patients remained unchanged after the completion of the therapy.

Group B (*Shiva Guggulu*)

In this group, out of all patients after the completion of treatment, thirteen patients showed moderate improvement (50%- < 75% relief in symptoms), two patients showed marked improvement (75%- < 90% relief in symptoms) and two patients got complete relief in signs and symptoms. No patients remained unchanged after the completion of therapy.

The present study concluded that *Agnikarma* and *Shiva Guggulu* as an oral drug is significantly effective in alleviating subjective and objective parameters of *Gridhrasi* without any adverse effects, and *Shiva Guggulu* can be used as a substitute for NSAIDS and other analgesics but when seeking relief for pain and associated symptoms of *Stambha, Aruchi, Spandana* and *Gaurava* one should opt for *Agnikarma*.

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