



Research Article

Comparative evaluation of efficacy of *Trayodashanga Guggulu* versus *Rasona Pinda* as an adjuvant with *Katibasti* in the management of *Gridhrasi* (Sciatica): RCT

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Abstract

Gridhrasi, listed among 80 *Nanatmaja Vatavyadhis* in Ayurveda, occurs due to vitiated *Vata* caused by a *Vatavardhaka* diet and lifestyle. When *Vata*, alone or with *Kapha*, affects the *Grudhrasi Nadi*, it results in symptoms similar to Sciatica in modern medicine. It reflects the *Dosha* imbalance's role in nervous system disorders. Aim: Comparative evaluation of efficacy of *Rasonapinda* and *Trayodashang guggul* as an adjuvant to *katibasti* in the management of *Gridhrasi* (Sciatica). Material and Methods: The 60 patients of *Gridhrasi* randomly divided into two equal Groups. Group A were treated with *Trayodashanga Guggulu* 500mg twice a day with warm water after meal and Group B were treated with *Rasona Pinda vati* 500mg twice a day with warm water after meal for 30 days and *katibasti* with *Dashamoola taila* for initial 7 days in both groups. Patients were assessed at 0th day, 15th, 30th and 45th day parameters like *Ruk*, *Stambha*, *Toda*, *Muhuspandana*, *Aruchi*, *Tandra*, Oswestry-Disability Assessment, Walking time, Bowstring test, SLRT and Schober's Test. Result: Statistically Significant improvement was observed during study in both the Groups in Subjective and Objective Parameters. Comparing both the Group A and B, Statistically more significant improvement was found in parameters like *Ruk*, *Toda*, Oswestry-Disability Assessment, Bowstring test, Walking time, Schober's test and SLRT in Group B treated with *Rasona Pinda* with *katibasti*. Conclusion: *Rasonapinda* is more efficacious than *Trayodashanga guggulu* as an adjuvant to *katibasti* in the management of *Gridhrasi*”

Keywords: Sciatica, *Gridhrasi*, *Vatavyadhi*, *Rasona*, *Guggulu*, *Dashamoola*

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Introduction

Ayurveda is the most ancient medical science that has originated in the land of India. Ayurveda is a way of life that promotes physical and mental well-being rather than just a medical science. People currently experience a steady shift in lifestyle away from healthy living, which leads to an increase in the prevalence of numerous diseases. *Gridhrasi* is *shoola pradhana Vataja Nanatmaja Vyadhi*. The classical description of it is suggestive of the typical gait which is like *Gridhra* (vulture). It is characterized by pain in *Sphik-Pradesha* (buttock region) which radiates downwards to *Kati* (lower back), *Prushtha* (back), *Uru* (thigh), *Janu* (popliteal area), *Jangha* (thigh), and *Pada* (foot) (1). There are two forms of *Gridhrasi* that *Acharya Charaka* has described: *Vata* dominant and *Vata-Kapha* dominant. In addition to *Stambha* (stiffness), *Ruk* (pain), *Toda* (pricking feeling), and *Spandana* (twitching), the *Vata* dominant variety of *Gridhrasi* is marked by

pain that originates in the buttock and spreads to the back, thigh, knee, calf, and foot (2). In the *Vata-Kaphaja* type of *Gridhrasi*, symptoms such as *Arochaka* (food aversion), *Tandra* (drowsiness), and *Gaurava* (feeling of heaviness) are present, which lead to *Sakthiutkshepa Nigraha* (3) (difficulty in raising the leg). The condition can be attributed to various factors, including trauma to the lumbosacral spine (*Abhighata*), postural defects (*Vishamachesta*), heavy lifting (*Bhara-vahana*), sudden unbalanced movements (*Atichesta*), continuous jerky motions, a sedentary lifestyle, and psychological influences such as worry or grief (*Chinta* or *Shoka*) (4). *Vata* is superior to all *doshas* who controls the rest of the *dosha* and responsible for vitiating other *doshas* and causes disease moving towards mortality. Most of the symptoms are mainly due to vitiated *Vata* which shows cardinal features *shula* or *Ruk* in classics. *Gridhrasi* can be correlated with sciatica in modern medicine because of the resemblance in symptoms. Sciatica is a disabling condition characterized by pain and/or abnormal sensations, such as tingling or numbness, radiating along the pathway of the sciatic nerve or originating from the lumbosacral nerve roots connected to it (5). In order to accomplish his/her desires every individual is busy with their schedules with the more involvement of heavy journey and exaggerate work. This becomes a basic cause to suffering in the middle age of life such as backache, radiating back pain. These complaints are common in household workers, and strenuous

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work jobs. Sedentary habits, stress, improper posture, repetitive jerky movements, and long periods of travel exert considerable pressure on the spine and lower pelvic area. Approximately 80-90% of individuals experience low back pain, with 5% of them developing sciatica (6). The lifetime prevalence of this condition is estimated to reach as high as 40%. It can become chronic and difficult to manage, leading to significant socio-economic consequences (7). In India, sciatica affects 2%-40% of the population. This incidence is associated with age, uncommon before age 20, with the highest prevalence observed in individuals aged 45 to 65 (8). Low back pain has a lifetime occurrence rate of 50% to 70%, and sciatica impacts approximately 40% of people during their lives. However, clinically significant sciatica that necessitates specialized care constitutes only 4% to 6% of cases (9). The modern treatment of sciatica involves the use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), muscle relaxants, and surgical interventions, though these approaches have certain limitations. Ayurveda *Shodhana* and *Shamana* Chikitsa are indicated like *Snehana*, *Swedana*, *Siravedha*, *Agnikarma*, *Basti*, and various *Herbomineral* formulations. *Shamana Chikitsa* is non-invasive, simple, safe and cost-effective.

Need of study

In modern medicine, treatment typically involves the use of analgesics, muscle relaxants, and steroids to alleviate pain and inflammation, along with physiotherapy to manage spinal compression. Though these approaches can offer some relief, they do not provide a definitive cure (10). Analgesics like NSAIDs (Non Steroidal Anti-Inflammatory Drugs), steroids cannot be consumed for long duration as they show adverse effects and disturbs normal metabolisms (11). Surgical interventions for this condition are quite costly and carry a risk of recurrence as well (12). Ayurveda provides numerous effective alternatives for managing this painful disorder. For treating *Gridhrasi* based on its pathogenesis, the preferred medications should possess properties such as *Vatashamaka* (*Vata* pacifying), *Kaphashamaka* (*Kapha* pacifying), *Vatanulomaka* (downward movement of *vata*), *Deepana-Pachana* (digestive and carminative), and *Shoolaprashamana* (analgesic) (13). In *Bhaishajya Ratnavali*, *Rasonapinda* has been described in the management of *Gridhrasi* carrying *Rasona* as main content (14). In a phytochemical analysis, alkaloids in the extract of *Allium sativum* implies that it may have properties that provide pain relief, decrease inflammation, offer antioxidant effects, and support for adaptability in the body (15). The other ingredients of *Rasona pinda* side by side make it more potent to pacify *vata* and *kapha dosha* and provide relief from pain. *Rasonapinda* is a purely herbal remedy known for its analgesic, anti-inflammatory, digestive, and carminative actions. These properties help in improve digestive fire (*Mandagni*) and relieve symptoms like pain and stiffness (16). *Katibasti* (oil pooling therapy) is an effective therapy which strengthens the muscles and connective tissue and also lubricates the joints and makes it more flexible (17). So it is taken as adjuvant to *Shamana Chikitsa*.

Aim and Objectives

Comparative evaluation of efficacy of *Rasonapinda* and *Trayodashanga guggulu* as an adjuvant to *katibasti* in the management of *Gridhrasi* (Sciatica).

Materials and Methods

Material: All data pertaining to the disease and medications was taken from *Samhitas*, other classical Ayurvedic texts, and modern scientific literature.

Clinical Source: Patients who visited the outdoor and indoor *Kayachikitsa* department, along with those from specialized camps, were enrolled for this study.

Study design: Randomized single blind standard controlled clinical trial

Study Type: Interventional Study

Sampling procedure: Random Sampling by Computerized table method

Sample Size: 60 (30 patients in each group)

Inclusion Criteria

Patients who agreed to participate with written informed consent were enrolled. Patients aged between 20-60 years of either sex were included. Patients who were having clinical signs and symptoms of *Gridhrasi* such as *Ruk*(pain), *Stambha*(stiffness), *Toda* (pricking pain), *Muhuspandana* (tingling), *Aruchi* (anorexia), *Tandra*(drowsiness) were selected. Patient fulfilled diagnostic criteria like positive SLRT, Schober's test, Bowstring Test were enrolled

Exclusion Criteria

Cases with a history of traumatic injury. Known cases of bone tumours, cancer of the spine, tuberculosis of the vertebral column, fibrosis of sacral ligaments, and protruded intervertebral discs. Patients who had systemic diseases such as diabetes mellitus, heart disease, renal disease, cancer, tuberculosis, or other major health conditions. Pregnant and lactating women were also excluded.

Posology

Detail of Drug Preparation:

Rasona pinda tablet will be prepared as per the standard operating procedures. Tablet *Trayodashanga Guggulu* and *Dashamoola Taila* were procured from Pharmaceutical Company for this study.

Group A (30 patient):

Tablet. *Trayodashanga Guggulu* 500 mg Twice a day after meal with warm water for 30 days. *Katibasti* with *dashamoola taila* for initial 7 days

Group B (30 patient):

Tablet. *Rasona Pinda* 500 mg Twice a day after meal with warm water for 30 days. *Katibasti* with *dashamoola taila* for initial 7 days

Table 01: Composition of *Rasona Pinda tablet* (trial drug)

S.no.	Ingredients	Botanical name	Part used	Quantity Used
1	<i>Rasona</i>	<i>Allium sativum</i>	Bulb	72gm
2	<i>Hingu</i>	<i>Ferula asafetida</i>	<i>Niryasa</i>	12 gm
3	<i>Jeeraka</i>	<i>Cuminum cyminum</i>	Fruit	12 gm
4	<i>Saindhava lavana</i>	<i>Sodium chloride</i> (rock salt)		12 gm
5	<i>Souvarchala lavana</i>	<i>Sodium chloride</i>		12 gm
6	<i>shunthi</i>	<i>Zingiber officinale</i>	Rhizome	12 gm
7	<i>Maricha</i>	<i>Piper nigrum</i>	Fruit	12 gm
8	<i>Pippali</i>	<i>Piper longum</i>	Fruit	12 gm
9	<i>Eranda</i>	<i>Ricinus communis</i>	Root	2kg

Preparation of Rasona pinda tablets

Raw Drugs were collected (*Rasona*, *Hingu*, *Jeeraka*, *Saindhava lavana*, *Souvarchala lavana*, *shunthi*, *Maricha*, *Pippali*, *Eranda mula*). Raw drugs Cleaned and dried out. *Rasona* bulbs were dried in sunlight for 3 days. *Rasona* bulb and all other ingredients turned into fine powder. Powder of all ingredients mixed thoroughly. *Eranda mula kwath* was prepared. Three *bhavan*as with *eranda mula kwath* given to the fine powder of ingredients. After that granules were prepared and 500mg tablet was made using tablet punching machine.

Table 02: Composition of Trayodasanga guggulu (Bhaishajya Ratnavali Vatarogadhikar-shlok 98-101)

Contents	Latin Name	Quantity
<i>Aabha (Babbul)</i>	<i>Acacia Arabica</i>	1 part
<i>Ashwagandha</i>	<i>Withania somnifera</i>	1 part
<i>Harpusha</i>	<i>Juniperus communis</i>	1 part
<i>Guduchi</i>	<i>Tinospora cordifolia</i>	1 part
<i>Shatavari</i>	<i>Asparagus recemosus</i>	1 part
<i>Gokshur</i>	<i>Tribulus terresteris</i>	1 part
<i>Vridhdadaru</i>	<i>Argyria speciosa</i>	1 part
<i>Rasna</i>	<i>Pluchea lanceolata</i>	1 part
<i>Shatapushpa</i>	<i>Foeniculum valgare</i>	1 part
<i>Karchur</i>	<i>Curcuma zedoaria</i>	1 part
<i>Yavani</i>	<i>Trachyspermum ammi</i>	1 part
<i>Shunthi</i>	<i>Zingiber officinale</i>	1 part
<i>Guggul</i>	<i>Commiphora mukul</i>	13 part
<i>Ghee</i>	Clarified butter	1/2 part

Table 03: Oil Used For Katibasti – Dashmoola Taila Composition

S. no.	Drug name	Latine name	Part used	Quantity
1	<i>Bilwa</i>	<i>Aegle mormelos</i>	Root	1 Part
2	<i>Agnimantha</i>	<i>Premna mucronata</i>	Root	1 Part
3	<i>Shyonak</i>	<i>Oroxylum indicum</i>	Root	1 Part
4	<i>Patala</i>	<i>Stereospermum suaveolance</i>	Root	1 Part
5	<i>Gambhari</i>	<i>Gmelina arborea</i>	Root	1 Part
6	<i>Shalaparni</i>	<i>Desmodium gangeticum</i>	Root	1 Part
7	<i>Prishniparni</i>	<i>Uraria picta</i>	Root	1 Part
8	<i>Brihati</i>	<i>Solanum indicum</i>	Root	1 Part
9	<i>Kantakari</i>	<i>Solanum surattense</i>	Root	1 Part
10	<i>Gokshura</i>	<i>Tribulus terrestris</i>	Root	1 Part
11	<i>Nirgundi</i>	<i>Vitex nigundo</i>	Leaf	1 Part

Assessment Criteria

Assessment done on 0th, 15th, 30th day during treatment & 45th day after treatment.

Subjective Criteria**Table 04: Gradation Of Assessment Criteria**

S.No.	Grade0	Grade1	Grade2	Grade3
1. <i>Ruka</i> (Pain): VAS scale	No pain (0-1)	Mild pain (2-4)	Moderate (5-7)	Severe pain (8-10)
2. <i>Stambha</i> (Stiffness)	No stiffness Forward bending upto toes	Patient able to do 75% movement -Forward bending upto mid leg	Patient able to do 50% movement Forward bending upto knee	Patient able to do 25% movement Forward bending upto mid thigh
3. <i>Toda</i> (Pricking pain)	Absent	Mild occasional after movements	Moderate -Frequent but not persistent	Severe and persistent
4. <i>Muhuspan</i> <i>ana</i> (numbness)	Absent	Mild after movement	Moderate With no or less movements	Severe Continuous ly without movements
5. <i>Tandra</i> (drowsiness)	No drowsiness	Mild drowsiness not affecting routine work.	Moderate drowsiness affecting routine work	Severe drowsiness with no work at all
6. <i>Aruchi</i> (Anorexia)	Having proper taste and appetite	Occasional loss of taste with decreased appetite	Daily, frequent loss of taste with decreased appetite	Daily, persistent, loss of taste with loss of appetite
7. Walking time-to cover 25 meters	upto 20 sec	upto 21-30 sec	upto 31-40 sec	upto 41-50 sec. or more
8. Bowstring Test	0'-Absent		1'-Present	

Functional disability – Oswestry Disability Assessment
Questionnaire (18)

Objective Criteria

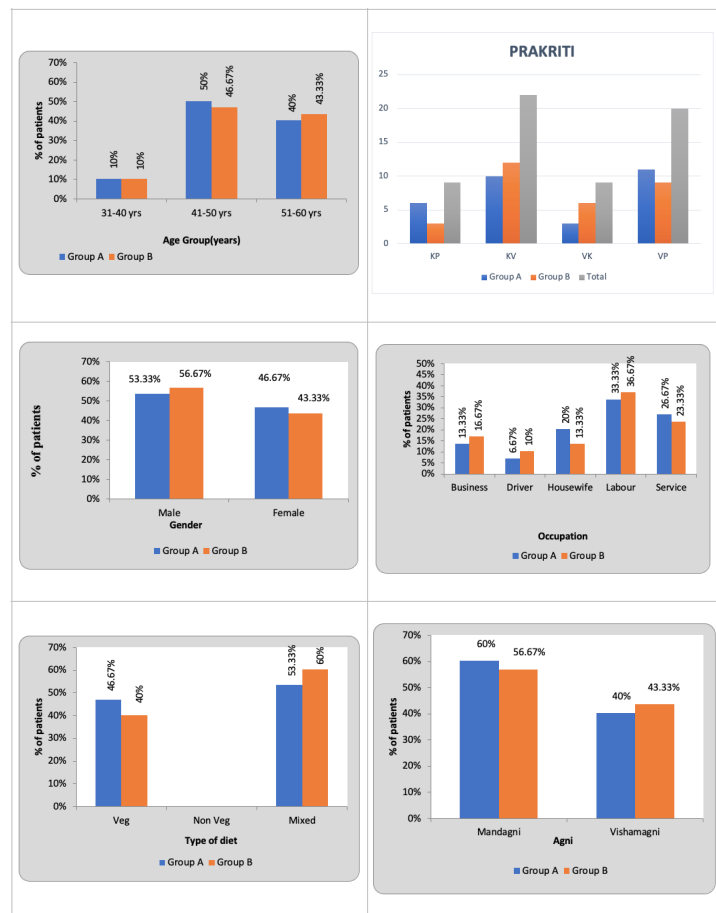
- SLR (Straight Leg Raising test)
- Schober's's Test

Statistical Analysis

Statistical analysis was conducted using both descriptive and inferential statistics. The methods employed included the Chi-square test, Student's paired and unpaired t-tests, Wilcoxon Signed Rank Test, and Mann-Whitney U test. The analyses were performed using SPSS version 27.0 and GraphPad Prism version 7.0, with a significance level set at $p < 0.05$.

Observation and Results

Figure 1: Distribution of patients according to demographic data



Demographic data showed that more incidence of *Gridhrasi* (Sciatica) is found in the forth decade of life, more in males, in patients engaged in Labour work followed by service man and housewife and consuming mixed diet. It is prevalent in *vata-kaphaja* *Prakruti* with *Mandagni*.

Table 05: Comparison of assessment parameter in two Groups before and after treatment

Ruk (pain)				
Group	0 day	45 day	Z-value	P- value
A	2.43±0.50	0.63±0.49	20.3	0.0001,S
B	2.40±0.49	0.20±0.40	21.87	0.0001,S
Comparing both groups using-Mann Whitney U test			Z=2.98	P=0.004
Stambha (Stiffness)				
Group	0 day	45 day	Z-value	P- value
A	2.36±0.49	0.60±0.49	17.02	0.0001,S
B	2.36±0.49	0.40±0.49	33.67	0.0001,S
Comparing both groups using-Mann Whitney U test			Z=1.68	P=0.09
Toda (Pricking Pain)				
Group	0 day	45 day	Z-value	P- value
A	2.30±0.46	0.63±0.49	15.05	0.0001,S
B	2.26±0.58	0.13±0.34	23.02	0.0001,S
Comparing both groups using-Mann Whitney U test			Z=3.23	P=0.002

Table 5 continued.....

Muhuspandana (Tingling)				
Group	0 day	45 day	Z-value	P- value
A	1.73±0.58	0.56±0.56	8.55	0.0001,S
B	1.60±0.56	0.10±0.30	16.15	0.0001,S
Comparing both groups using-Mann Whitney U test			Z=2.02	P=0.048,S
Aruchi				
Group	0 day	45 day	Z-value	P- value
A	0.86±0.77	0.43±0.50	3.26	0.003,S
B	0.66±0.71	0±0	5.13	0.0001,S
Comparing both groups using-Mann Whitney U test			Z=1.25	P=0.21.NS
Tandra (Drowsiness)				
Group	0 day	45 day	Z-value	P- value
A	0.53±0.62	0.36±0.49	1.99	0.047,S
B	0.50±0.62	0.13±0.34	4.09	0.0001,S
Comparing both groups using-Mann Whitney U test			Z=1.62	P=0.10,NS
Walking time to cover 25 meters				
Group	0 day	45 day	Z-value	P- value
A	1.90±0.60	0.66±0.54	11.88	0.0001,S
B	2.20±0.66	0.56±0.56	16.08	0.0001,S
Comparing both groups using-Mann Whitney U test			Z=2.75	0.008,S
Schober's Test				
Group	0 day	45 day	t- value	P- value
A	18.16±1.23	19.73±1.36	13.70	0.0001,S
B	18.03±1.35	21.13±1.10	27.95	0.0001,S
Comparing both groups using-Student's unpaired t-test			t=9.62	P=0.0001,S
Oswestry -Disability Assessment Score				
Group	0 day	45 day	t- value	P- value
A	32.96±4.68	21±4.68	17.94	0.0001,S
B	33.60±3.71	17.10±1.90	32.26	0.0001,S
Comparing both groups using-Student's unpaired t-test			t=5.39	0.0001,S
SLRT Score				
Group	0 day	45 day	t- value	P- value
A	79.83±10.62	87.50±3.65	5.07	0.0001,S
B	72.66±13.81	88.16±4.04	6.91	0.0001,S
Comparing both groups using-Student's unpaired t-test			t=2.89	P=0.005,S
Bowstring Test Score				
Group	0 day (no. of patient)	45 day (no. of patient)	χ ² -value	P- value
A	30(100%)	18(60%)	15	0.0001,S
B	30(100%)	9(30%)	32.31	0.0001,S
Comparing both groups using-Chisquare (χ ²) test			χ ² =5.45	P=0.019,S
Z-value: Wilcoxon Signed Rank Test t- value: Student's paired t test χ ² -value: Chisquare test				

Effect on Subjective & Objective Criteria

Ruk (pain), baseline scores were 2.43 ± 0.50 (Group A) and 2.40 ± 0.49 (Group B), reducing to 0.63 ± 0.49 and 0.20 ± 0.40 , respectively. The Wilcoxon Signed Rank Test showed significant improvement in both groups ($p=0.0001$), with Mann-Whitney U test indicating Group B performed better ($z=2.98$, $p=0.004$).

Stambha (stiffness), baseline scores were identical at 2.36 ± 0.49 , decreasing to 0.60 ± 0.49 (Group A) and 0.40 ± 0.49 (Group B). Significant improvement was observed in both groups ($p=0.0001$), but no inter-group difference was noted.

Toda (pricking pain), baseline scores of 2.30 ± 0.46 (Group A) and 2.26 ± 0.58 (Group B) reduced to 0.63 ± 0.49 and 0.13 ± 0.34 . Both groups improved significantly ($p=0.0001$), with Group B showing greater efficacy ($z=3.23$, $p=0.002$).

Muhuspadana (numbness), baseline scores were 1.73 ± 0.58 (Group A) and 1.60 ± 0.56 (Group B), decreasing to 0.56 ± 0.56 and 0.10 ± 0.30 . Significant improvement occurred in both groups ($p=0.0001$), with Group B showing better results ($z=2.02$, $p=0.048$).

Aruchi (appetite loss), baseline scores were 0.86 ± 0.77 (Group A) and 0.66 ± 0.71 (Group B), reducing to 0.43 ± 0.50 and 0 (Group B). Both groups showed significant improvement ($p=0.0001$) with no difference between them.

Tandra (drowsiness), baseline scores of 0.53 ± 0.62 (Group A) and 0.50 ± 0.62 (Group B) reduced to 0.36 ± 0.49 and 0.13 ± 0.34 . Significant improvement was noted in both groups ($p=0.0001$), with no inter-group difference.

Oswestry Disability Index, baseline scores were 32.96 ± 4.68 (Group A) and 21 ± 4.68 (Group B), with significant improvement in both groups ($p=0.0001$). However, Group B showed superior outcomes ($t=5.39$, $p=0.0001$).

Bowstring Test, positivity reduced from 100% in both groups at baseline to 60% (Group A) and 30% (Group B), with Group B performing significantly better ($\chi^2=5.45$, $p=0.019$).

Walking Time (25 meters), baseline scores were 1.90 ± 0.60 (Group A) and 2.20 ± 0.66 (Group B), reducing to 0.66 ± 0.54 and 0.56 ± 0.56 . Both groups improved significantly ($p=0.0001$), but Group B demonstrated better results ($z=2.75$, $p=0.008$).

Overall, Group B showed superior outcomes in pain, pricking pain, numbness, disability index, Bowstring Test, and walking time, while both groups were equally effective in reducing stiffness, appetite loss, and drowsiness.

Schober's Test demonstrated significant improvement in both groups, with baseline scores of 18.16 ± 1.23 (Group A) and 18.03 ± 1.35 (Group B) increasing to 19.73 ± 1.36 and 21.13 ± 1.10 , respectively. Statistical analysis using the paired t-test showed significant changes within both groups ($p=0.0001$). Comparison between groups using the unpaired t-test revealed that Group B performed significantly better than Group A at day 15 ($t=6.36$, $p=0.0001$), day 30 ($t=10.66$, $p=0.0001$), and day 45 ($t=9.62$, $p=0.0001$).

SLRT (Straight Leg Raise Test), baseline scores were 79.83 ± 10.62 (Group A) and 72.66 ± 13.81 (Group B), improving to 87.50 ± 3.65 and 88.16 ± 4.04 , respectively. The paired t-test indicated significant improvement in both groups ($p=0.0001$), while the unpaired t-test showed Group B was significantly better at day 45 ($t=2.89$, $p=0.005$).

Overall, Group B demonstrated superior outcomes in both Schober's Test and SLRT.

Table 06: Percentage of relief after treatment in Group A

Relief	Score Range	Number of patients	Percentage
Poor	<30%	0	0
Moderate	30-70%	18	60
Excellent	(>70%)	12	40
Total		30	100
60% of the patients had moderate relief and 40% of them had excellent relief in Group A.			

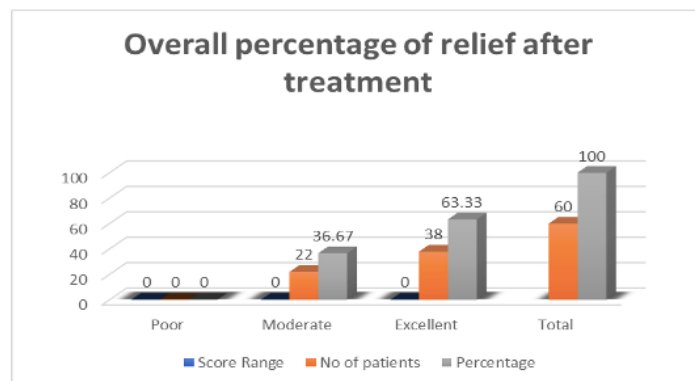
Table 07: Percentage of relief after treatment in Group B

Relief	Score Range	No of patients	Percentage
Poor	<30%	0	0
Moderate	30-70%	4	13.33
Excellent	(>70%)	26	86.67
Total		30	100
13.3% of the patients had moderate relief and 86.6% of them			

Table 08: Overall percentage of relief after treatment

Relief	Score Range	No of patients	Percentage
Poor	<30%	0	0
Moderate	30-70%	22	36.67
Excellent	(>70%)	38	63.33
Total		60	100
Overall 36.67% of the patients had moderate relief and 63.33%			

Figure 2: Overall percentage of relief



Discussion

The study was conducted with the aim to assess "Comparative Evaluation of efficacy of *Trayodashanga Guggulu* versus *Rasona Pinda* as an adjuvant with *Katibasti* in the management of *Gridhrasi* (Sciatica)". *Gridhrasi* is mentioned in classical Ayurvedic texts and is categorized under the 80 types of *Nanatmaja Vatavyadhi* (diseases caused by *Vata*). As per Ayurvedic principles, excessive consumption of *Vatavardhak Ahara* and improper lifestyle habits lead to the aggravation of *Vata*. When this aggravated *Vata*, either alone or combined with *Kapha*, localizes in the *Gridhrasi Nadi* (sciatic nerve), it results in the onset of the condition known as *Gridhrasi*.

Probable mode of action of *Rasona Pinda*

Rasona Pinda has been mentioned in *Bhaishajya Ratnavali* (19) and *Chakradutta* which consists of *Rasona*, *trikatu*, *Eranda* as

chief ingredients possessing mainly *katu rasa*, *Tikshna guna*, *Ushna virya*, *Kaphavatahar properties* (20). *Rasana* is a *Rasayana*. Being a *Rasayana*, this drug nourishes the *Dhatus* (bodily tissues) and prevents *Dhatu Dushti* (*Dushyas*) (21). “*Sarvangam prasarati*” property described for *Lahsuna* in ‘*Saaligrama nighantu*’. It means *virya* of *lahsuna* enters through micro channels of body and reaches site of pathogenesis. It causes *Agnideepana*, *strotoshodhana* and *Vatashamana* thus relieves *Ruk*, *sthamba of kati*, *uru*, *janusandhi*. *Trikatu*, composed of *Pippali*, *Maricha*, and *Shunthi*, acts through its *Katu*, *Tikta rasa*, *Ushna virya*, *Vatakaphashamaka*, *Deepana* and *pachana* properties. Thus helps in improving *mandagni* and *ama* thereby correcting appetite loss and reducing pain and stiffness. Its analgesic, anti-inflammatory, and neuroprotective properties help in reducing symptoms (22). *Trikatu* shown to have anti-inflammatory action thus helpful in musculoskeletal diseases, by reducing stiffness and swelling reported in various research studies (23). *Srinivasan et.al.*, [24] concluded that Compounds like piperine and gingerol present in *trikatu* offer neuroprotective effects, further aiding in reduction of nerve inflammation. Additionally *Rasana Pinda* has given *bhavana* (trituration) of *Erandamoola kwath*. *Eranda* (*Ricinus communis*) being *madhura*, *katu*, *kashaya* in *rasa*, *Snigdha sukshma* in *guna*, *madhura* in *vipaka* with *ushna virya* will help in combating vitiated *vata-kapha dosha* (25). It causes *Sroto sodhana* and *vata anulomana* by which it restores normal circulation of *vata*, and act as analgesic anti-inflammatory properties. *Morya et.al.*, [26] showed that *Erandamoola* (*Ricinus communis*) is effective due to its anti-inflammatory, and analgesic properties. Additionally, it promotes *Apana Vata*, aiding bowel movements and reducing sciatic nerve pressure, providing relief from radiating pain (27). *Saindhava Lavana* and *Souvarchala Lavana* are beneficial for *Sandhi Roga* (joint disorders), *Vata-Kaphaja* disorders because of their hot (*ushna*), potent (*tikshna*), penetrating (*vyavayi*), fine (*sukshma*), appetizing (*rochana*), digestive (*pachana*), and laxative (*sramsana*) properties (28). *Valiparambil C Deep et.al.*, [29] showed that *lavana* can probably act on the *Srotodushti* and remove the *srotorodha*, by entering into minute channels. Thus it effectively reduces the stiffness, pain, anorexia, heaviness by enhancing circulation and body metabolism. *Hingu* and *Jeeraka*, possess muscle relaxant, anti-inflammatory, analgesic and anti-spasmodic effect (30), may helped in relieving *shoola* (pain), *shotha* (swelling), *sakthi utkhepa nigrahana* (SLRT). Thus inference can be made that ingredients of *Rasana Pinda* have effectively aided in pacification of symptoms of *Gridhrasi*.

Probable mode of Action of Trayodashanga Guggulu

Trayodashanga Guggulu is a polyherbal formulation disintegrates the *samprapti* of *Gridhrasi* on account of their *Shothahara*, *Dhatwagnideepana* and *Vatanulomana* effect (31). The ingredients of *Trayodashanga Guggulu* like *Ashwagandha*, *Hapusha*, *Guduchi*, *Rasna*, *Sunthi*, and *Ajamoda* alleviate *Vata Dosha* (32) and provide relief in painful movement of joints due to their *Ushna Virya*, *Vata Kapha Shamaka* property whereas *Babbul* specifically targets *Asthidhatwagnimanda*, which pertains to the metabolism related to bone (33). *Trayodashanga Guggulu* also improves the function of *Agni* due to its *Deepana* and *Pachana* activities comprising *Trikatu*. Improved functions of *Agni* with these drugs help to nourish the body tissues properly. Proper nutrition helps to delay the degeneration process of *Sandhi* and thus *Sciatica* nerve too. *Trayodashanga Guggulu* useful in managing conditions such as *Snayugatavata* (disorders of tendons and ligaments), *Asthigatavata* (bone-related issues), *Majjagatavata* (disorders of the bone marrow), *Khanjavata*

(limping conditions), and a range of *Vata* disorders, including those affecting the nervous system, rheumatic conditions, and musculoskeletal ailments (34). *Ekka R et.al.*, [35] reported that the components of *Trayodashanga Guggulu* are primarily characterized by properties such as *Snigdha* (unctuous), *Madhur rasa* (sweet taste), *Madhur vipaka* (sweet as post-digestive effect), and *Ushna virya* (hot potency), which contribute to its pain-relieving effects. *Shunthi*, *Shatapushpa*, and *Yavani* improved digestion and metabolism. Ghee facilitated the absorption and penetration of the drug. The results further demonstrate its efficacy in relieving inflammatory conditions such as *sciatica* and shed light on the underlying mechanisms involved in their pathogenesis.

Probable Mode of Action of Katibasti (Oil Pooling Therapy)

Katibasti is a type of external therapy (*bahiparimarjana swedana chikitsa*) that involves the application of a warm, oily fomentation. It is characterized as *snehayukta* (oil-based), *sagni* (heat-retaining), *ekanga* (localized), *snigdha* (unctuous), *madhyama* (medium consistency), *drava* (liquid), and *samshamaniya* (soothing) in nature (36). *Katibasti* procedure produced a *Swedana* effect by keeping the oil warm throughout the treatment, which helped in alleviation of muscle spasms, enhancing blood circulation to the affected area, which raised the pain threshold, and ultimately reduced the pain. By virtue of its *Snehana* action, the *katibasti* procedure nourished the *Asthi Dhatu*, blood vessels (*Sira*), tendons (*Snayu*), and strengthened the nerves (37). In present clinical trial *Dashmool Taila katibasti* is used as an adjuvant therapy in both the Groups for initial 7 days. *Dashmool Taila Kati Basti* nourished the joints of the back region and thus pacified the *vata-kapha Doshas* and relieved pain and stiffness further released the tension of muscles (38).

Conclusion

Gridhrasi (*sciatica*) can be correlated with its modern counterpart based on similarities in etiology, pathogenesis, and symptoms such as pain (*Ruk*), pricking sensation (*Toda*), stiffness (*Stambha*), numbness (*Muhuspandana*), and restricted leg raising. This study showed that *Gridhrasi* have higher prevalence in males aged 41–50, particularly those with *Vata-Kaphaja Prakriti*, sedentary lifestyles, and improper postures. Statistically significant improvement was observed in subjective parameters (pain, stiffness, pricking sensation, numbness, and disability) and objective tests (Schober’s and SLRT) in both groups. This study aimed to compare the efficacy of *Trayodashanga Guggulu* and *Rasana Pinda* in the management of *Gridhrasi* (*Sciatica*). Thus after the completion of study *Rasana Pinda* demonstrated superior outcomes compared to *Trayodashanga Guggulu*, with sustained effects post-treatment and no adverse effects. Thus, inference can be made that *Rasana Pinda* is more effective and a safer alternative in managing *Gridhrasi*. Further studies is recommended with larger sample size and longer durations to validate these findings.

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