



# A COMPARATIVE CLINICAL TRIAL TO EVALUATE THE EFFECTIVENESS OF *CHANDANADI LEPA* AGAINST *SIGRUPUNARNAVADI LEPA* IN THE MANAGEMENT OF *SATAPADI DAMSA*

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## ABSTRACT

Toxicity is a big problem nowadays because the world is filled with toxins instead of living things. When toxins come from living creatures, it's called "*jangama visha*." This includes the venoms of animals like snakes, scorpions, and insects. Centipedes fall into the insect category, known as "*keeta visha*". The *Satapadi*, or Centipede, is one of the oldest poisonous arthropods in the world. It has a hundred legs and venomous fangs. It injects a neurotoxic venom through its venom ducts, causing a burning sensation, swelling, pain, and redness.

There are five orders of centipedes: Scutigermorpha, Lithobiomorpha, Craterostigmomorpha, Geophilomorpha, and Scolopendromorpha. Scolopendra, the largest and most dangerous type, exhibits 'matriphagy' behavior. There are eight types of *Satapadi*: *Parusha*, *Krishna*, *Chitra*, *Kapila*, *Peethika*, *Raktha*, *Swetha*, and *Agni Prabha*. "Centipede bites are most common after summer. Toxicity from these bites is usually not deadly, but it causes severe pain. It also leads to swelling, redness, itching, and a burning sensation, making it difficult to carry out daily activities. The overall effects are usually not serious, but complications can occur. By knowing the importance of this unique concept study was selected. *Sigrupunarnavadi lepa* is scientifically proven in *keeta visha* and traditionally used by *visha vaidyas* in Kerala to treat *satapadi damsa*. *Chandanadi lepa* is mentioned for *satapadi visha*, found in *keetadivisha prakarana* of *Kriyakoumudi*, is not popularly used by the practitioners. This comparative study is an attempt to evaluate the effectiveness of *Chandanadi lepa* along with *Dasanga agada* as internal administration.

**Key words :** *Chandanadi lepa*, Centipede bite, *Sigrupunarnavadi lepa*, *Satapadi visha*.

## INTRODUCTION

*Satapadi* (Centipede) is one of the oldest poisonous arthropods across the world. In Latin word Centi - means 'hundred' and Pedis - means 'foot'<sup>1</sup>. Centipedes are elongated multisegmented with a single pair of legs on each body segment<sup>2</sup>, they have strong mandibles and venomous fangs, called forcipules, are derived from the first pair of legs<sup>3</sup>. A neurotoxic venom is injected through venom ducts<sup>4</sup>, they produce paired bites of pinpoint type with spacing of up to 12 mm. The colour may be greenish black or black<sup>5</sup>.

They are 5 extant orders. Scutigermorpha ("house centipedes"), Lithobiomorpha ("stone centipedes"), Craterostigmomorpha (only two congeneric species), Geophilomorpha ("earth centipedes"), and Scolopendromorpha<sup>6</sup>. Scolopendra is the largest and most dangerous<sup>7</sup>, some species of them are 'matiphagy'<sup>8</sup>.

*Satapadi* is categorized under *keeta* and *jangama visha adishtana*. Generally all *keetas* have their poison predominant with *vata* and *pitta*, and *Satapadi* under *Agneya keeta*<sup>9</sup>. *Satapadi* means "*Satam padam yasya*" which is having hundred legs<sup>10</sup>. They are 8 types. *Parusha*, *Krishna*, *Chitra*, *Kapila*, *Peethika*, *Raktha*, *Swetha*, *Agni Prabha*. Bite by *Satapadi* (Centipede) having burning sensation (*Daha*), has swelling (*Sopha*), pain (*Ruk*), redness (*Raga*)<sup>11</sup>.

## BACKGROUND AND RATIONALE OF STUDY

Centipedes live primarily in tropical and subtropical regions<sup>12</sup>. Approximately 3500 species of centipedes are found in the class Chilopoda, Phylum arthropoda. They are among the less well studied arthropods. They are distributed widely, being present on every continent except Antarctica, and are especially common in warm temperature<sup>13</sup>. The commonest genus encountered in India is Scolopendra<sup>14</sup>. Topography, bioclimate and two monsoon seasons in Kerala, provide optimal niches for centipedes. The centipede form an important faunal element in the soils of Kerala. Species of scolopendrid centipedes under 8 genera pertaining to Kerala<sup>15</sup>. Centipedes are usually active at night and prefer moist warm climates<sup>16</sup>, because they lack the waxy cuticle of insects and arachnids and so lose water briskly through the skin<sup>17</sup>. Presentations for centipede bites are more often occur during summer nights. Bites are often seen on the hands and feet. Bites to the feet are often due to centipede proclivity for hiding in shoes and due to people accidentally stepping on these arthropods while barefoot. Bites to the hands are more common in children or patients who attempt to handle the centipede<sup>18</sup>. There are so many research papers published in different international and national platforms in context to toxicity of snake bite, dog bite etc. But there are very few papers are found regarding the centipedes and the toxicity of centipedes is not usually fatal but the pain is moribund. By knowing the importance of this unique concept study was selected<sup>19</sup>. *Sigrupunarnavadi lepa*<sup>20</sup> is scientifically proven in *keeta visha* and traditionally used by *visha vaidyas* in Kerala to treat *satapadi damsa*. *Chandanadi lepa*<sup>21</sup> is mentioned for *satapadi visha*, found in *keetadivisha prakarana* of *Kriyakoumudi*, is not popularly used by the practitioners. This comparative study is an attempt to evaluate the effectiveness of *Chandanadi lepa*<sup>21</sup> along with *Dasanga agada*<sup>22</sup> internal administration.

**AIM**

To compare the effectiveness of *chandanadi lepa*<sup>21</sup> against *sigrupunarnavadi lepa*<sup>20</sup> in the management of *Satapadi damsa*.

**OBJECTIVE**

- To evaluate the effectiveness of *Chandanadi Lepa*<sup>21</sup> along with *Dasanga agada*<sup>22</sup> in *Satapadi damsa*.
- To evaluate the effectiveness of *Sigrupunarnavadi lepa*<sup>20</sup> along with internal use of *Dasanga agada*<sup>22</sup> in the management of *sathapadi damsa*.
- To compare the effectiveness of *chandanadi lepa*<sup>21</sup> against *sigrupunarnavadi lepa*<sup>20</sup> along with *Dasanga agada*<sup>22</sup> in the management of *satapadi damsa*.

**MATERIALS AND METHODS**

Table: 1

NO	MATERIALS	METHODS
1	Available Literature	Systemic arrangement
2	Drugs	<i>Dasanga Agada</i> <sup>22</sup> (Both Groups) <i>Chandanadi Lepa</i> <sup>21</sup> (Trial Group) <i>Sigrupunarnavadi lepa yoga</i> <sup>20</sup> ( Control group)
3	Case Record Format	Prepared, data entry will be made
4	Consent Form	Prepared
5	Research participants	Participants satisfying the diagnostic and inclusion criteria will be recruited alternately in 2 groups.
6	Area of study	Clinical

**STUDY SETTING** : Pappinissery Visha Chikitsa Kendra,  
Post Graduate Department of Agadatantra, MVR Ayurveda  
Medical College, Kannur

**STUDY POPULATION** : Diagnosed cases of centipede bite within 48 hours, age group 16-60 years patients will be selected from Pappinisseri Visha Chikithsa Kendram, Kannur

**STUDY DESIGN** : Comparative clinical trial at OPD level.

### **SELECTION CRITERIA**

#### **DIAGNOSTIC CRITERIA**

The participants with a history of centipedes bite having one or more of the following criteria will be included for the study.

1. Pain at the site of the bite.
2. Burning sensation at the site of bite.
3. Swelling at the site of the bite.
4. Redness at the site of the bite.

#### **INCLUSION CRITERIA**

1. Diagnosed cases of centipede within 48 hours
2. Age group between 16 - 60 years
3. Participants irrespective of gender, caste, religion and economic status.
4. Participants with symptoms like pain, burning sensation, oedema and erythema.

#### **EXCLUSION CRITERIA**

1. Participants who have undergone any other treatment for this condition.
2. Participants with altered consciousness
3. Participants with systemic diseases.
4. Participants presenting with complications like anaphylactic reaction.
5. Pregnant woman, lactating mother.
6. All bite cases apart from centipede bite.

**SAMPLING SIZE CALCULATION :**

2 groups each of 20 participants

$$n = \frac{2SD^2 \left( P + \frac{C}{2} \right)^2}{d^2} \quad SD \text{ ( standard deviation )}$$

$$P \text{ ( power )} = 2.58$$

$$C \text{ ( confidence interval )}, \frac{C}{2} = 1.96$$

$$D \text{ ( Mean Difference )} = 1.2$$

$$= 1.18$$

$$n = 39.86$$

**SAMPLING PROCEDURE :**

Participants will be selected by simple random lottery sampling methods

Group 1 - Trial group (20 cases)

Group 2 - Standard group (20 cases)

**INTERVENTION****DRUG SOURCE**

- The drugs of *Dasanga agada*<sup>22</sup>, *Sigrupunarnavadilepa churna*<sup>22</sup> and, *Chandana* will be purchased from local market which will be identified and authenticated from *Dravyaguna* Department of MVR Ayurveda Medical College, Parassinikkadavu, Kannur. Preparation carried out from MVR AMC pharmacy as per GMP guidelines.

## PREPARATION OF MEDICINE

Table 2 : *DASANGA AGADA*<sup>22</sup> (A.H. U. 37/27-28)

N o	Ingredient s	Botanical/Latin name	Family	Part used	Malayalm name	Quantity
1	<i>Vacha</i>	<i>Acorus calamus</i> <i>Linn.</i>	Araceae	Rhizome	Vayambu	Equal parts
2	<i>Hingu</i>	<i>Ferula asafetida</i> <i>Boiss</i>	Apiaceae	Resin	Kayam	Equal parts
3	<i>Vidanga</i>	<i>Embelia ribes</i> <i>Burm</i>	Myrsinaceae	Fruit	Vizhalari	Equal parts
4	<i>Saindhava m</i>	<i>Rock salt</i>			Uppu	Equal parts
5	<i>Gajapippal i</i>	<i>Scindapus officinalis Schott.</i>	Piperaceae	Fruit	Athi Thippali	Equal parts
6	<i>Patha</i>	<i>Cyclea peltata</i> <i>Linn.</i>	Menispermaceae	Root	Padak Kizhangu	Equal parts
7	<i>Prativisha</i>	<i>Conitum heterophyllum Wall</i>	Ranunculaceae	Root	Athividaya m	Equal parts
8	<i>Sunthi</i>	<i>Zingiber officinale</i> <i>Rosc.</i>	Zingiberaceae	Rhizome	Chukk	Equal parts
9	<i>Maricha</i>	<i>Piper nigrum Linn.</i>	Piperaceae	Fruit	Kurumulak u	Equal parts
10	<i>Pippali</i>	<i>Piper longum Linn.</i>	Piperaceae	Fruit	Thippali	Equal parts

Table 3 : *SIGRUPUNARNAVADI LEPA CHOORNAM*<sup>20</sup>(Prayoga samuchayam,Tritheeya Parichedam)

Sl. No	Ingredients	Botanical/Latin name	Family	Part used	Malayalam name	Quantity
1	Sigru	Moringa olifera	Moringaceae	Bark	Muringa	Equal parts
2	Punarnava	Boerhavia diffusa Linn.	Nyctaginaceae	Root	Tazhuthama	Equal parts
3	Haridra	Curcuma Longa Linn	Zingiberaceae	Rhizome	Manjal	Equal parts
4	Vacha	Acorus calamus Linn	Araceae	Rhizome	Vayambu	Equal parts
5	Raktha chandana	Pterocarpus santalinus Linn	Fabaceae	Heartwood	Raktha chandanam	Equal parts
6	Patha	Cyclia peltata Miers	Menispermaceae	Root	Padakkizhangu	Equal parts
7	Eshwari	Aristolochia indica Linn.	Aristolochiaceae	Root	Karalakam	Equal parts
8	Yashti	Glycyrrhiza glabra Linn	Fabaceae	Rhizome	Erattimadhuram	Equal parts
9	Sireesha	Albizzia lebeck Benth	Fabaceae	Bark	Nenmenivaka	Equal parts
10	Gokshura	Tribulus terrestris Linn	Zygophyllaceae	Seed	Njerinjil	Equal parts

Table 4 : *CHANDANADI LEPA*<sup>21</sup> (*Keetadi visha prakaranam, Kriyakoumudhi*)

N o	Ingredient s	Botanical/Latin name	Family	Part used	Malayalam Name	Quantity
1	<i>Raktha Chandana</i>	<i>Pterocarpus santalinus</i> .Linn	Fabaceae	Heart wood	Raktha Chandanam	Equal parts
2	<i>Pakwa Panasapatra a- Parnanala</i>	<i>Petiole of Artocarpus heterophyllus. leaves</i>	Moraceae	Petiole of leaves	Plavila njettu	Equal parts
3	<i>Rice washed water</i>	<i>Oryza sativa</i> .Linn	Poaceae	Rice grain	Kadi	Equal parts

## METHOD OF PREPARATION

### *DASANGA AGADA*<sup>22</sup>

All the above ingredients of *Dasanga agada*<sup>22</sup> are taken in equal quantity by weight and handmade pill of 2 gm each prepared, according to *Vatikalpana Vidhi*

### *SIGRUPUNARNAVADI LEPA CHURNAM*<sup>20</sup>

All the drugs of the yoga are taken in equal quantity by weight, dried and made in to very fine powder and is mixed with sufficient quantity of water, made to lepa form prior to application *CHANDANADI LEPA*<sup>21</sup>

*Chandana, Pakwa panasapatra parnanalam* are washed well, taken in equal quantity, *chandana* rubbed over a rough stone, then *pakwa panasapatra parnanalam* grinded well in *khalwayantra*, combining together by using rice washed water. Lepa is prepared.

## WITHDRAWAL CRITERIA / STOPPAGE RULE

- Patient if not co-operate to the procedure,
- If symptoms get worsens.
- Patient if experiences any emergency or complications.
- Patients will be diagnosed according to the conditions, and necessary management will be given.



## OUTCOME MEASUREMENTS

The following subjective and objective variables will be assessed using different grading methods before and after treatment

- Subjective Variables
  - Pain
  - Burning sensation
- Objective Variables
  - Swelling
  - Erythema

## PLAN OF ANALYSIS

Assessment criteria includes the four main cardinal symptoms- pain, swelling, burning sensation and erythema will be analyzed. The changes in above said parameters are noted at specific intervals and assessment were done accordingly. overall relief obtained are assessed based on result obtained by statistical analysis.

100% : Cured

76% - 99% relief : Marked improvement

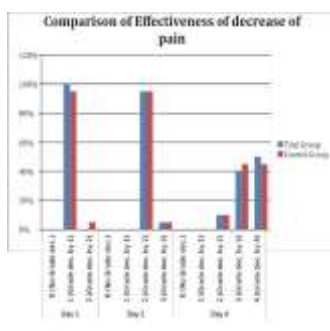
51% - 75% relief : Moderate improvement

26% - 50% relief : Mild improvement

0% - 25% relief : Unchanged

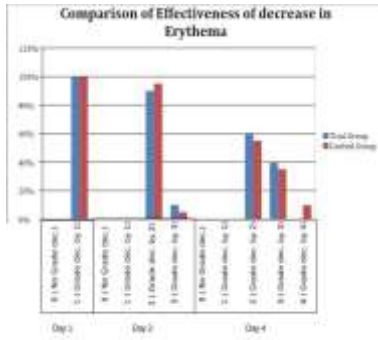
## Result

**Fig :1 Comparison of effectiveness of decrease of pain**



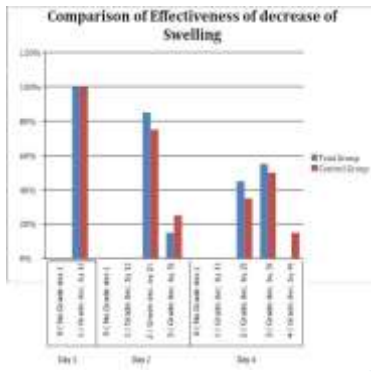
Here Mann- Whitney U Test is used for the comparison of effectiveness of decrease of pain between trial and control group. There is no significant difference in Day 1, Day 2, Day 4, Since the corresponding p value > 0.05.

**Fig :2 Comparison of effectiveness of decrease in erythema**



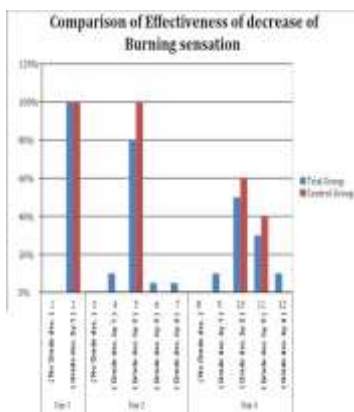
Here Mann- Whitney U Test is used for the comparison of effectiveness of decrease of erythema between trial and control group. There is no significant difference in Day 1, Day 2, Day 4, Since the corresponding p value > 0.05.

**Fig :3 Comparison of effectiveness of decrease of swelling**



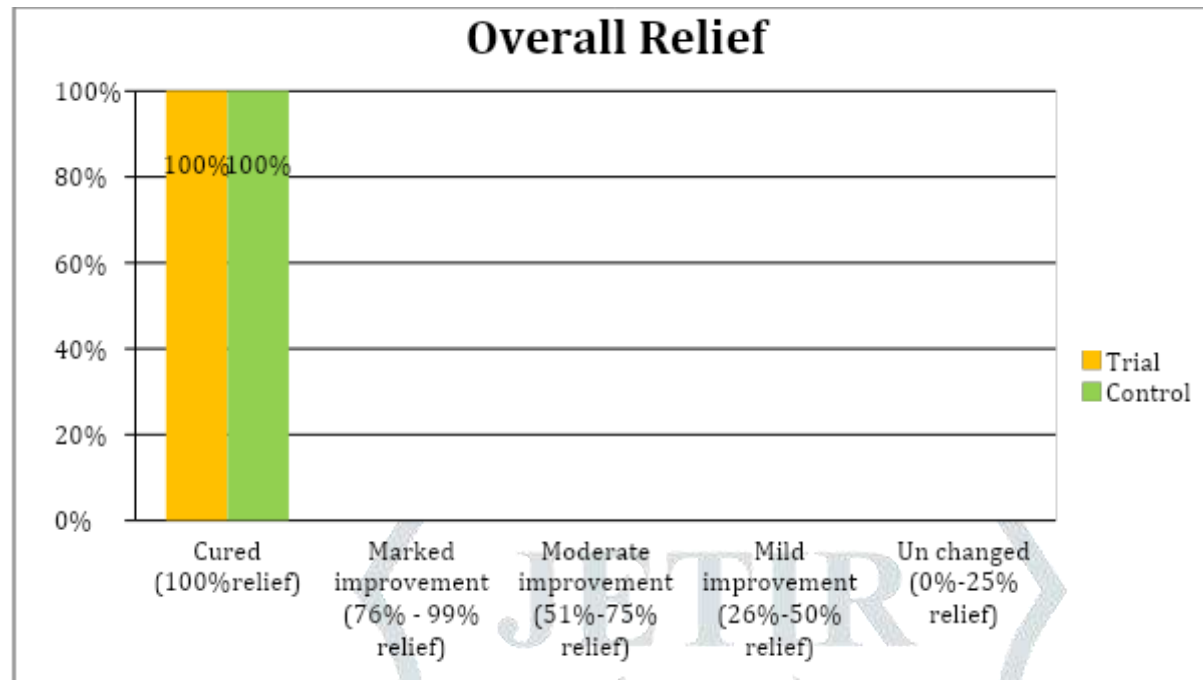
Here Mann- Whitney U Test is used for the comparison of effectiveness of decrease of swelling between trial and control group. There is no significant difference in Day 1, Day 2, Day 4, Since the corresponding p value > 0.05.

**Fig :4 Comparison of effectiveness of decrease of Burning sensation**



Here Mann-Whitney U Test is used for the comparison of effectiveness of decrease of burning sensation between trial and control group. There is no significant difference in Day 1, Day 2, Day 4, Since the corresponding p value  $> 0.05$ .

Fig :5



There is no significant difference in overall relief between group 1 and 2. Thus, statistically it is derived that Chandanadi lepa is equally effective when compared with Sigrupunarnavadi Lepa in the management of pain, erythema, swelling, and burning sensation caused by Centipede bite.

## Discussion

- **Dasanga agada** : Sarvakeeta visham jayeth, Proved effective drugs in *Keeta dams*
- **Sigrupunarnavadi lepa** : visha sophā haram, Proved effective drugs in *Keeta dams*.
- **Chandanadi lepa**
- **Raktha chandana** : Madhura thiktha rasa pradhanam, Seethaveeryam, Pittaharam, Vishahara
- **Tandulodaka** : Madhura kashaya rasa pradhanam, Seetha veerya, Madhura vipakam, Tridoshagham
- **Pakwa Panasapatra parnanalam** : Thiktha, Kashaya rasa pradhanam, Ushnaveerya, Vatanulomanam, Deepana, vatahara.
- *Chandanadi lepa* when applied externally is capable of reducing the main symptoms like pain, swelling, erythema, burning sensation.
- The symptoms – pain, swelling, erythema, burning sensation were computed by using appropriate grading scale.
- Erythema and swelling are objective signs – easier to measure
- Pain and burning sensation were subjective parameters. Here patients' personality, attitude and belief strongly affected in the presentation of symptoms.

- Statistically there was no significant difference in the overall effect between two groups and clinically it was noticed that both the drugs are equally effective.
- No complication or adverse drug reaction were noted during the treatment period.

## **Conclusion**

The present study entitled “A comparative clinical trial to evaluate the efficacy of Chandanadi lepa against Sigrupunarnavadi lepa in the management of Satapadi damsa” was an attempt to compare the efficacy of chandanadi lepa against shigru punarnavadi lepa along with Dasanga agada in the management of satapadi damsha. After a detailed conceptual study, critical review, analytical study, clinical observation and discussion the following conclusions are drawn.

- Centipede bites are not rare in clinical practice and are most frequent in the months following peak summer, in dark indoor settings, and on the lower limbs. Toxicity is not usually fatal but pain is moribund. Along with pain marked swelling, redness, and burning sensation also occurs, in most of the cases causing difficulty in doing their daily activities.
- In classics references regarding Satapadi damsa and management is explained under keeta visha prakaranam.
- The manifestation of Satapadi damsha varies in its severity depending on various factors such as age and constitution of the affected person, amount of venom injected etc.
- The study drug chandanadi lepa is mentioned in the textbook of kriyakoumudhi under keetadi visha prakaranam
- The case record format was designed to collect the information for the study and was filled as answered by the patients. Proper grading was done on various symptoms. The data was converted into tables and diagrams for analysis. Mann- whitney U test and Wilcoxon Signed rank test were used to draw the conclusion after analysis.
- The research design was developed such that all the participants satisfying the inclusion and exclusion criteria were selected for the study by simple random lottery method as sampling technique. 40 participants were selected for the study from Visha Chikitsa Kendra, Pappinisseri, Kerala and were alternately divided into two groups of 20 each. Group one received Chandanadi lepa externally along with Dasanga gutika internally that of Group 2 received Sigrupunarnavadi lepa as external application along with intake of Dasanga gutika.

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