

## EFFICACY OF *DASHANG LEPA* IN THE MANAGEMENT OF *VRANASHOPHA* (CELLULITIS): A PRELIMINARY CLINICAL STUDY

### Research Article

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#### Abstract

*Acharya Sushruta* has mentioned a detail description of inflammatory swelling under the heading of *Vranashopha*. Clinical features of *Vranashopha* are much resembled to inflammatory swelling like as cellulitis. Cellulitis can cause mild discomfort to severe toxemia, which can lead to death. In such condition, only systemic drugs are in clinical use, but they are not much helpful to eradicate the acute problem. It is probably, due to lack of their local availability on the swollen area, which further leads to ischemia cell death and ultimately gangrene formation. In this way we hypothesize that drugs, which could reduce local swelling/tissue damage, may be helpful in management of inflammation. *Dashang lepa* (mixture of ten indigenous drugs) mixed with 1/5<sup>th</sup> part of pure cow's ghrta (butter) was taken for external application over *Vranashopha* (cellulitis) in trial group. Clinical study in 20 patients of cellulitis in respect of local and generalized criteria was done. In the study, group containing *Dashang lepa* showed statistically highly significant (<0.01) in terms of reduction of pain, edema, erythema, tenderness and fever in the patients of cellulitis. Thus results revealed *Dashang lepa* is very effective against superficial inflammatory swelling.

**Key words:** *Acharya Sushruta, Vranashopha, Cellulitis, Inflammation, Dashang lepa, Ghrta*

#### Introduction:

*Acharya Sushruta*, father of Indian surgery (*Shalya Tantra*) was well aware of importance of *Vranashopha* (inflammatory swelling) and *Vrana* (wound) and their management in surgical practice. The *Vranashopha* was described as earlier phase of *Vrana* (1).

Clinical features of *Vranashopha* told by *Acharya Sushruta* very much

resembles inflammatory swelling like as cellulitis. Cellulitis is characterised by an acute, diffuse, spreading, oedematous non suppurative inflammation of the dermis and subcutaneous tissues (2). Cellulitis can cause mild discomfort to severe complications like sepsis, local gangrene, necrotising fasciitis, septicaemia which can lead to death (3). Condition of necrotising fasciitis is very dangerous which has 39% of mortality rate (4). So it is necessary to prevent spreading inflammation in primary condition and save more hazardous complications in health system. Though there are several systemic anti-microbial drugs are available for management of the problem but these are not sufficient to eradicate the acute

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problem completely and have their own limitations. In that way, external (local) application of some herbal drug formulation over cellulitis can also prove better to manage the disease. *Dashang lepa* (mixture of ten indigenous drugs) mixed with 1/5<sup>th</sup> part of pure cow's ghrta (butter) was selected for external application over *Vranashopha* (cellulitis) in trial group. Ointment Su-mag (i.e. combination of dried magnesium sulphate 58%, urea 1%, sulphacetamide sodium 2.5%, proflavine and glycerine) was

advised in control group. This clinical study was done in 20 patients of cellulitis in the Department of *Shalya Tantra*, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

#### **Material and Method:**

*Dashang lepa* is a powdered form herbal preparation made by ten indigenous drugs. These drugs and their properties with useful part are given in table no. 1

**Table: 1 Contents of *Dashang lepa* and their Properties**

<b>Plant</b>	<b>Rasa (Taste)</b>	<b>Guna (Physical properties)</b>	<b>Virya (Potency)</b>	<b>Vipaka (Outcome after digestion)</b>	<b>Dosh karma (Effect on doshas)</b>	<b>Useful part</b>
<b>1. Shirish</b> ( <i>Albizia lebbek</i> Benth.)	Kashaya	Laghu, Ruksha	Ishad-Ushna	Katu	Tridosahara	Bark
<b>2. Madhuyasthi</b> ( <i>Glycyrrhiza glabra</i> Linn.)	Madhura	Guru, Snigdha	Sheeta	Madhura	Vata-Pittashamak	Root
<b>3. Tagar</b> ( <i>Valeriana wallichii</i> DC.)	Tikta, Katu, Kashaya	Laghu, Snigdha	Ushna	Katu	Kapha-Vatashamak	Root
<b>4. Raktachandan</b> ( <i>Pterocarpus santalinus</i> Linn.)	Tikta, Madhura	Guru, Ruksha	Sheeta	Katu	Kapha-Pittashamak	Heartwood
<b>5. Ela</b> ( <i>Elettaria cardamomum</i> Linn. Maton)	Katu, Madhura	Laghu, Ruksha	Sheeta	Madhura	Tridosahara	Fruit-Seed
<b>6. Jatamansi</b> ( <i>Nardostachys jatamansi</i> DC.)	Tikta, Kashaya, Madhura	Laghu, Snigdha, Tikshna	Sheeta	Katu	Kapha-Pittashamak	Rhizome
<b>7. Haridra</b> ( <i>Curcuma longa</i> Linn.)	Tikta, Katu	Laghu, Ruksha	Ushna	Katu	Kapha-Vatashamak, Pittarechak	Rhizome
<b>8. Daruharidra</b> ( <i>Berberis aristata</i> DC.)	Tikta, Kashaya	Laghu, Ruksha	Ushna	Katu	Kapha-Vatashamak	Root
<b>9. Kushta</b> ( <i>Saussurea lappa</i> C.B. Clarke)	Tikta, Katu	Laghu, Ruksha	Ushna	Katu	Kapha-Vatashamak	Root

<b>10.Hrivera</b> ( <i>Pavonia odorata</i> Willd.)	<i>Tikta, Katu</i> , <i>Kashaya</i>	<i>Laghu,</i> <i>Snigdha</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Kapha-</i> <i>Vatashamak</i> <i>a</i>	Root
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*Dashang lepa* is mentioned in many *Ayurvedic texts* (5,6,7,8,9) and described as *Vranasophaghna* (anti-inflammatory) remedy for local application. Some plants of *Dashang lepa* were collected from periphery of Varanasi and some were obtained from local market. All the plants were perfectly identified with the help of Department of *Dravyaguna*, Faculty of Ayurveda, IMS, BHU. All 10 drugs were taken in equal amount and thoroughly washed in running tap water and dried in the natural shade at about 26°C Temperature. Completely dried drugs were grinded in a mixer and obtained powder was filtered through the sieve no. 85. The fine powder was kept in a dry and air tight container. *Dashang lepa* is mixed with Cow's pure *ghrita* in 5:1 ratio for local application.

After detailed clinical history and informed consent 24 patients with sign and symptom of cellulitis were registered as per designed proforma from the OPD/IPD of the Department of Shalya Tantra, Sir Sunderlal hospital I.M.S., B.H.U., Varanasi (U.P.). Random selection was made irrespective of age, sex, occupation, duration of disease, economic status etc. Out of these 20 patients could complete the study and 4 patients discontinued the treatment so they were not included in the study. Routine and needful investigation such as CBC, Blood sugar, RFT, LFT, HIV, HBsAg, had been done.

#### **Inclusion Criteria:**

Cellulitis of all parts of body except orbital cellulitis, with sign and symptoms as pain, tenderness, edema, erythema, local temperature and fever were included.

#### **Exclusion criteria:**

Patients of Diabetes mellitus, Hypertension, Chronic Renal Failure, Malignancy, Orbital cellulitis, HBsAg positive, HIV positive were excluded from the study.

#### **Assessment Criteria for cellulitis:**

**Local:** Local criteria as colour (erythema), edema, temperature, induration, tenderness were assessed by different grading system in the patient with cellulitis. Mild, moderate and severe grading were done according to standard protocol.

**Generalised:** Generalised criteria as general condition, pulse rate, blood pressure, respiration rate, pain, fever were assessed.

**Investigation:** Investigation as TLC (Total Leukocyte Count), DLC (Differentiate Leukocyte Count), ESR (Erythrocyte Sedimentation Rate) were selected for assessment.

Local and generalised criteria were assessed daily and investigation criteria were assessed weekly and grading of the criteria was done according to designed proforma.

**Statistical analysis:** Mean and Standard deviations (SD) of all variable calculated. Within the group paired t-test was done of all groups and t and p value was calculated (10).

#### **Plan of study:**

Patient with sign and symptom of cellulitis were divided in two groups on basis of Total Leucocyte Count [TLC];

**1. Group I-** In this group 10 patients with  $<15,000 \text{ cells/mm}^3$  TLC were registered. These were further divided in sub group: **A. Control** – 5 patients of control group were treated by local

application of ointment Su-mag **B. Trial** – 5 patients of trial group were treated by local application of *Dashang Lepa*. No antibiotic was given in this group.

2. **Group II-** In this group 10 patients with  $>15,000$  cells/mm<sup>3</sup> TLC were registered. These were further divided in sub group: **A. Control** – 5 patients of control group were treated with Antibiotic Inj. Ceftriaxone and Sulbactam in dose 1.5 gm I.V. B.D. in adult with local application of ointment Su-mag. **B. Trial** – 5 patients of trial group were treated with Antibiotic Inj. Ceftriaxone and Sulbactam I.V. in dose 1.5 gm I.V. B.D in adult with local application of *Dashang lepa*. Total duration of treatment were given as per require. But for clinical study the data were collected and analysed for 15 days at the interval of 5 days for three successive follow-ups.

### Results:

- Out of 20 patient 70% were male and prevalence of cellulitis was found maximum 35% in age group between 41-50 years. Incidence of disease was found more in farmers. Maximum 50% patients were of *Pitta* dominant prakriti. Lower extremity was found most common anatomical site of cellulitis infection which comprised 65% of total patients. The outcome was considered as 20% patients were got suppuration and 80% were got resolution of inflammation.
- Pain experienced by patients before treatment and during three successive follow-ups was estimated and paired t-test was applied for t and p value. The mean of pain before treatment was 2.80, 3.00, 2.80, 3.00 in group IA, IB, IIA, IIB respectively and in third follow up it was 1.60, 1.00, 1.00, 0.00 in group IA, IB, IIA, IIB respectively. Group IB and IIB were statistically highly significant ( $p<0.01$ ) in terms of reduction of pain.
- The mean of edema before treatment was same 3.00 in all groups but in third follow up (F3) it was 2.00, 0.60, 0.80, 0.20 in group IA, IB, IIA, IIB respectively. Group IB, IIA, IIB were statistically highly significant ( $p<0.001$ ) in terms of reduction in edema.
- The mean of tenderness before treatment was 2.6, 3.0, 2.6, 2.8 in group IA, IB, IIA, IIB respectively and in third follow up it was 1.4, 0.6, 1.2, 0.2 in group IA, IB, IIA, IIB respectively.
- The mean of erythema before treatment was 2.2, 2.8, 2.4, 3.0 and in third follow up it was 1.6, 0.6, 1.0, 0.2 in group IA, IB, IIA, IIB respectively. Group IB and IIB were statistically highly significant ( $p<0.001$ ) in terms of reduction in erythema.
- The mean of fever before treatment was 2.2, 2.8, 2.4, 2.4 and in third follow up it was 1.4, 0.8, 0.4, 0.0 in group IA, IB, IIA, IIB respectively. Group IA was statistically significant ( $p<0.05$ ) and Group IB and II (A & B) were statistically highly significant ( $p<0.01$ ) in terms of fever.

**Table: 2 Statistical analysis of Pain before and after treatment in all groups**

	Groups	PAIN SCORE (Mean ± SD )				Within the group comparison paired t-test (BT-F3)
		Before Treatment (BT)	After Treatment(AT)			
			F1	F2	F3	
<b>I</b>	<b>A</b>	2.80 ± 0.45	2.40 ± 0.55	2.00 ± 0.00	1.60 ± 0.55	1.20 ± 0.45 t=6.00 p<0.01(HS)
	<b>B</b>	3.00 ± 0.00	2.00 ± 0.71	1.40 ± 0.55	1.00 ± 0.71	2.00 ± 0.71 t=6.32 p<0.01(HS)
<b>II</b>	<b>A</b>	2.80 ± 0.45	2.40 ± 0.55	1.80 ± 0.45	1.00 ± 0.71	1.80 ± 0.84 t=4.81 p<0.01(HS)
	<b>B</b>	3.00 ± 0.00	1.60 ± 0.54	0.80 ± 0.45	0.00 ± 0.00	--

(SD- Standard Deviation, F1- First follow up, F2- Second follow up, F3- Third follow up, HS-Highly Significant)

**Table: 3 Statistical analysis of Edema before and after treatment in all groups**

	Group	EDEMA SCORE (Mean ± SD )				Within the group comparison paired t-test (BT-F3)
		Before Treatment (BT)	After Treatment(AT)			
			F1	F2	F3	
<b>I</b>	<b>A</b>	3.00 ± 0.00	2.40 ± 0.55	2.20 ± 0.45	2.00 ± 0.71	1.00 ± 0.71 t=3.16 p<0.05(S)
	<b>B</b>	3.00 ± 0.00	1.40 ± 0.55	1.00 ± 0.71	0.60 ± 0.55	2.40 ± 0.55 t=9.79 p<0.001(HS)
<b>II</b>	<b>A</b>	3.00 ± 0.00	2.00 ± 0.71	1.40 ± 0.55	0.80 ± 0.84	2.20 ± 0.84 t=5.88 p<0.01(HS)
	<b>B</b>	3.00 ± 0.00	1.20 ± 0.45	0.60 ± 0.55	0.20 ± 0.45	2.80 ± 0.45 t=14.00 p<0.001(HS)

(S- Significant)

**Table: 4 Statistical analysis of Tenderness before and after treatment**

TENDERNNESS SCORE (Mean ± SD)						
	Group	Before Treatment (BT)	After Treatment(AT)			Within the group comparison paired t-test (BT-F3)
			F1	F2	F3	
<b>I</b>	<b>A</b>	2.60 ± 0.89	2.00 ± 0.71	1.60 ± 0.89	1.40 ± 0.89	1.20 ± 0.45 t=6.00 p<0.01(HS)
	<b>B</b>	3.00 ± 0.00	1.60 ± 0.55	0.80 ± 0.45	0.60 ± 0.55	2.40 ± 0.55 t=9.80 p<0.001(HS)
<b>II</b>	<b>A</b>	2.60 ± 0.55	2.00 ± 0.00	1.80 ± 0.45	1.20 ± 0.45	1.40 ± 0.55 t=5.72 p<0.01(HS)
	<b>B</b>	2.80 ± 0.45	1.40 ± 0.55	0.60 ± 0.55	0.20 ± 0.45	2.60 ± 0.55 t=10.61 p<0.001(HS)

**Table: 5 Statistical analysis of Erythema before and after treatment**

ERYTHEMA SCORE (Mean ± SD)						
	Groups	Before Treatment (BT)	After Treatment(AT)			Within the group comparison paired t-test (BT-F3)
			F1	F2	F3	
<b>I</b>	<b>A</b>	2.20 ± 0.84	2.00 ± 0.71	1.80 ± 0.45	1.60 ± 0.55	0.60 ± 0.54 t=2.45 p>0.05(NS)
	<b>B</b>	2.80 ± 0.45	1.20 ± 0.45	1.20 ± 0.45	0.60 ± 0.55	2.20 ± 0.45 t=11.00 p<0.001(HS)
<b>II</b>	<b>A</b>	2.40 ± 0.55	2.20 ± 0.45	1.60 ± 0.55	1.00 ± 1.00	1.40 ± 0.89 t=3.50 p<0.05(S)
	<b>B</b>	3.00 ± 0.00	1.20 ± 0.83	0.60 ± 0.55	0.20 ± 0.45	2.80 ± 0.45 t=14.00 p<0.001(HS)

(NS- Not Significant)

**Table: 6 Statistical analysis of Fever before and after treatment in all groups**

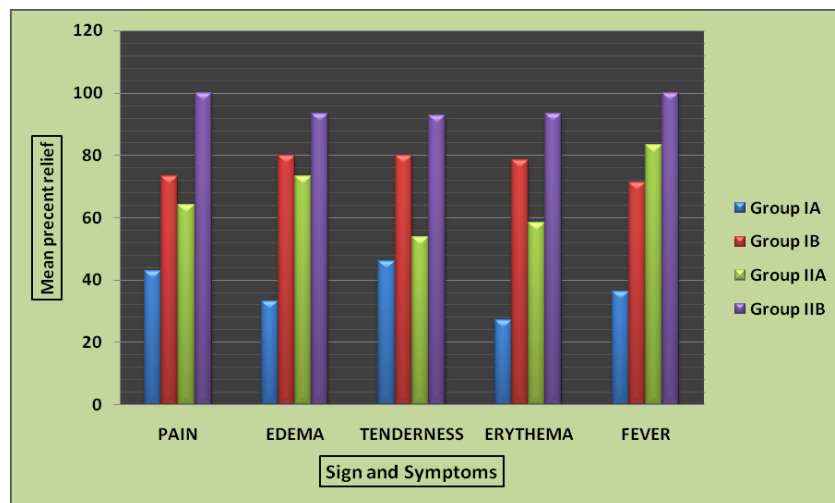
FEVER SCORE (Mean ± SD)						
	Groups	Before Treatment (BT)	After Treatment(AT)			Within the group comparison paired t-test (BT-F3)
			F1	F2	F3	
<b>I</b>	<b>A</b>	2.20 ± 0.84	2.00 ± 0.71	1.60 ± 0.55	1.40 ± 0.55	0.80 ± 0.45 t=4.00 p<0.05(S)
	<b>B</b>	2.80 ± 0.45	1.20 ± 0.45	1.00 ± 0.00	0.80 ± 0.45	--
<b>II</b>	<b>A</b>	2.40 ± 0.55	1.40 ± 0.89	1.20 ± 0.84	0.40 ± 0.55	2.00 ± 0.70 t=6.32 p<0.01(HS)
	<b>B</b>	2.40 ± 0.89	1.00 ± 0.71	0.40 ± 0.55	0.00 ± 0.00	2.40 ± 0.89 t=6.00 p<0.01(HS)

**Total relief in Sign and Symptoms of Cellulitis during treatment**

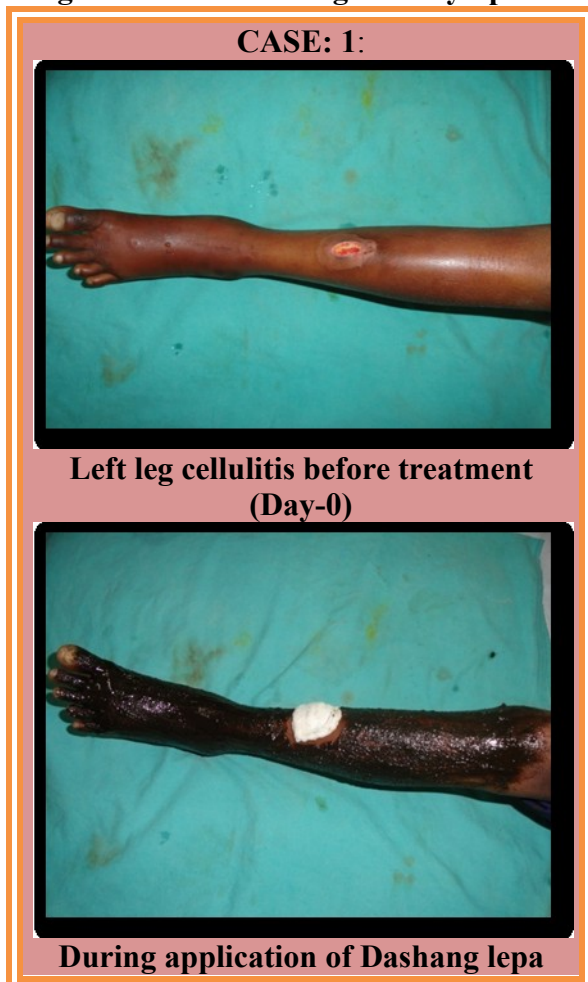
**Table: 7 Relief percentages on the signs and symptoms of Cellulitis (n = 20)**

Sr. No	Symptoms	Groups	Symptom Score			% Decrease in symptom score after treatment
			B T	AT	DIFF.	
1.	<b>Pain</b>	IA	14	8	6	42.85
		IB	15	4	11	73.33
		IIA	14	5	9	64.28
		IIB	15	0	15	100
2.	<b>Edema</b>	IA	15	10	5	33.33
		IB	15	3	12	80.00
		IIA	15	4	11	73.33
		IIB	15	1	14	93.33
3.	<b>Tenderness</b>	IA	13	7	6	46.15
		IB	15	3	12	80.00
		IIA	13	6	7	53.84
		IIB	14	1	13	92.85
4.	<b>Erythema</b>	IA	11	8	3	27.27
		IB	14	3	11	78.57
		IIA	12	5	7	58.33
		IIB	15	1	14	93.33
5.	<b>Fever</b>	IA	11	7	4	36.36
		IB	14	4	10	71.42
		IIA	12	2	10	83.33
		IIB	12	0	12	100

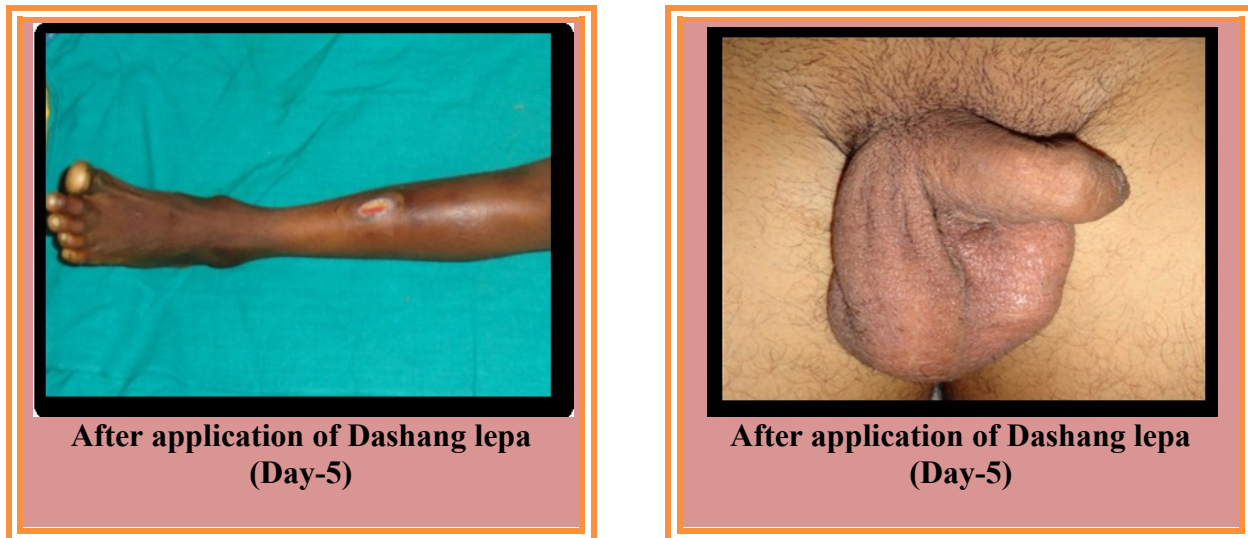




**Fig: 1 Total relief in sign and symptoms of cellulitis during treatment with all groups**







**Fig. 2 Application of Dashang Lepa in patients of Cellulitis**

### **Discussion:**

The present study revealed that the *Dashang lepa* is very effective and statistically highly significant ( $p < 0.01$ ) in terms of pain. It might be due to decrease in prostaglandin level. This clearly shows this drug contain analgesic properties. Inflammatory edema is reduced which is probably due to *Dhatushoshak* (absorptive) effect of *Kashaya* and *Tikta Rasa* (taste) of most of the drugs in *Dashang lepa*. It alleviates vitiated *Kapha* to reduce the edema. Erythema in inflammatory process is due to increase blood supply over injured area due to vasodilation. In present study *Dashang lepa* has shown statistically highly significant ( $p < 0.001$ ) in terms of reduction in erythema (redness). This might be due to *Pittashamak* effect of the drug when apply with cow's pure butter (*ghrita*). The *Kashaya*, *Tikta* rasa and *Sheeta Virya* have capability to constrict blood vessels, hence it reduces the erythema. Most of the patient showed significant relief and found to be free from toxic effect of disease within 2-3 days of the application of *Dashang Lepa*. This is probably due to it makes a barrier to superficial of the diseased region when

applied with *ghrita* so can also prevent further invasion of bacteria.

### **Conclusion:**

*Dashang lepa* reduces all cardinal features of inflammation as Pain (Dolor), Edema (Tumour), Erythema (Rubor), Temperature (Calor) in patients of cellulitis. Thus it can be proven as potent anti-inflammatory medicine. In present study *Dashang lepa* was taken with *ghrita* in 5:1 ratio to form paste and applied lukewarm on affected area according to mentioned in *Ayurvedic* literature. No adverse reaction was found after topical application of *Dashang lepa*; hence it is proven safe and to be applying in each age group of patients. It is a preliminary study on *Dashang lepa* and further research works are going on in experimental model.

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