



Research Article

An experimental evaluation of the efficacy of Himavan Agad Lepa in acute dermal reaction induced by Bhallataka Taila

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Abstract

Bhallataka (*Semecarpus anacardium* Linn.), classified under *Upavisha Varga*, is a potent *Ayurvedic drug* with both therapeutic and toxic properties. Accidental dermal exposure to its oil may result in severe inflammatory reactions such as erythema, blistering, and edema. Modern medicine lacks a specific antidote for *Bhallataka*-induced dermatitis, which highlights the need for effective traditional remedies. Objectives: To investigate the role of *Himavan Agad* in reducing erythema, blisters, and edema. Method: The experimental study was carried out in albino mice as per CPCSEA and OECD guidelines after getting approval from the Institutional Animal Ethics Committee (IAEC). Raw drugs were collected, authenticated, standardized, and used to prepare *Himavan Agad Lepa*. *Bhallataka Taila* was extracted using the classical Ayurvedic method. An in-vivo experimental study was carried out on 24 healthy albino mice, divided into four groups: Control, Disease Control, Standard (0.2% Silver nitrate gel), and Test (*Himavan Agad Lepa*) group. Dermal toxicity was induced using *Bhallataka Taila*, and treatment was applied twice daily for seven days. Parameters including erythema, blister formation, and edema, were systematically recorded. On the 8th day, histopathological analysis of skin samples was performed. Results: The application of standardized *Himavan Agad Lepa* significantly reduced dermal reactions when compared with the Disease Control group. Improvement was noted in erythema, blister formation, and edema with enhanced wound healing. Skin reactions were rated as per Indian Standard BIS (1992). Conclusion: *Himavan Agad Lepa* demonstrated significant therapeutic potential in mitigating *Bhallataka* - induced dermal reactions, supporting its role as an effective Ayurvedic intervention.

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Keywords: *Bhallataka Taila*, *Semecarpus anacardium* Linn, *Himavan Agad Lepa*, Erythema, Edema, Blister

Introduction

Agad tantra is a branch of Ayurveda that deals with the diagnosis and treatment of different types of poisoning, including snake, insect, spider, and rat bites, as well as toxic effects caused by poisonous plants and minerals (1). *Bhallataka* [*Semecarpus anacardium* Linn.] is one of the important and powerful fast acting Ayurvedic drug. It belongs to Anacardiaceae family. *Aacharya Charaka* has described that contact with fruit or flower of *Bhallataka* causes *Agantuja Shotha* (Exogenous swelling) in the body (2). *Bhallataka* is mentioned under *Upavisha varga* by *Rasatarangini* and *Dhanwantari nighantu* (3, 4). It is described as a poisonous medicinal plant in drugs and cosmetic act [India], 1940 (5). *Ayurveda* has mentioned that *Bhallataka* is *Ushna*

Veerya (hot potency) and *Teekshna Guna* (sharp quality) in its attributes. It should be used with caution. Because of its *Ushna Veerya* (hot potency) its mere skin contact cause boils, irritation, inflammation, pain, blister, skin lesion resembles bruise and later turns into ulcer (6). Microscopic studies revealed the presence of large amount of oils in the pericarp on treatment with Sudan III (7). The corrosive juice from the fruit's pericarp contains catechol, fixed oil, and anacardol (C₁₈H₁₃O₃.COOH), and its corrosive qualities are attributed to two phenolic acids, C₁₆H₁₅O₃.COOH and C₁₄H₁₃O₃.COOH (8). The primary chemical components of *Bhallataka's* tarry oil include bhallawanol—a complex mixture of phenolic compounds featuring cis and trans- isomers of urushiol (3-pentadecenyl-8'-catechol) (9). Two incompletely identified phenols, perhaps analogous to the cardanol of Cashew Nut Shell Liquid (CNSL), being decarboxylated anacardic acids are also reported. Among these, one is being named as semecarpol and appears to be an undecenyl phenol and the other, named as anacardol, appears to be a dodecenyl phenol (10). According to Modern Toxicology, *Bhallataka* is an irritant poison. When the tarry oil present in pericarp of the fruit comes in contact with skin, it produces dermatitis (11). In rural areas, *Bhallataka* branches are

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used as fuel in brick kilns, causing contact dermatitis in workers due to smoke exposure. Allergic individuals may develop symptoms even without direct contact, sometimes merely by passing under the tree's shadow as allergens spread through air. Hence, *Bhallataka*-induced dermatitis is a common problem in India (12). The American Academy of Dermatology reports up to 50 million annual cases of urushiol-induced dermatitis in the United States, which comprise 10% of all lost-time injuries in the U.S. Forest Service (13). Rashes commonly occur at the site of contact or at distant sites, such as the face and genitals, due to toxin transmission via hand contact. Lesions typically begin within a few hours or up to 3 days after application. Healing usually takes 1–2 weeks without scarring, though untreated cases may last up to 3 weeks; post-inflammatory hyperpigmentation can persist lifelong in dark-skinned individuals (14). Modern medicine lacks specific antidotes for *Bhallataka*-induced dermal reactions, relying instead on basic local cleansing with agents like povidone-iodine, Dettol, or Savlon, followed by application of bland liniments to manage external symptoms (15). A clinical trial found that medicines made from *Bhallataka* (*Semecarpus anacardium*) helped relieve pain and improve health in patients with arthritis, sciatica, and even cancer, without causing harmful side effects (16). In view of its several potent medicinal properties, it is acclaimed as *Ardhavaidya* (half a physician) in *Ayurveda* and as a Golden acorn at the time of Galen in the western world (17). The clinical study done at Mumbai, Maharashtra on *Bhallataka* reports adverse drug reactions in 25% of patients in the form of itching, maculo-papular rashes (18). The incidence of contact dermatitis in the general population has been estimated to range from 1.7% to 6.3% (19). The median prevalence of contact allergy to at least one allergen stands at 21.1% (range: 12.5%–40.6%), based on data collected across all age groups and countries (20). *Bhallataka* is irritant vegetable organic poisons. *Himavan Agad* has been mentioned by *Acharya Vagbhata* in *Ashtanga Hrudaya* 36th chapter *Sarpavisha pratishedha*, in the context of *Mandalisarpa visha chikitsa* (21). It is indicated for topical applications in *Visarpa* (Herpes Zoster), *Visphot* (Pemphigus vulgaris), *Daha* (burning sensation), *Shotha* (swelling), *Jwar* (fever) etc. The *agad* is combination of *Sheet* (cold), *Kashay* (astringent), *Stambhan* (obstruct), *Vishaghna* (anti-toxic), *Pittashamak* (Pitta-pacifying), *Visarpaghna dravya*, so it may act on the main characteristic of local reactions of *Bhallataka*, as it acts as *Vyadhiviparita* (disease-opposite), *Ashukaritwa* (quick action/spreading) and *Visarpan* (fast spread). So, *lepa of agad* (anti poisonous formulation) may be more effective. Hence, *Himavan Agad*, which is traditionally indicated in *Vishajanya Shotha* (swelling due to poison), was selected as the test drug for managing acute dermal reactions caused by *Bhallataka*. While earlier studies have evaluated other *Ayurvedic* formulations for *Bhallataka* induced dermal reactions, but no any *agad pralepa* (topical antidotal medicinal paste) have been undertaken in local reaction of *Bhallataka*, this work specifically assessed the efficacy of an *Ayurvedic polyherbal Agad Pralepa* (topical antidotal medicinal paste) in Swiss albino mice.

Objectives

1. To evaluate and compare the local side effects of *Bhallataka Taila*.
2. To study the effect of *Himavan Agad Lepa* on the local side effects produced by *Bhallataka Taila*

Materials and Methods

To assess the efficacy of drug it is necessary to authenticate and standardize the drug before using in experiments. The *Bhallataka Taila* and *Himavan Agad Choorna* were prepared as per guidelines and standard procedure given in textbook under the guidance of guide and HOD of *Rasashastra* and *Bhaishajya kalpana* department of home institute.

Preparation of Bhallataka Taila

In *Charaka shamhita viman sthana* method of extraction of *Bhallataka Taila* is mentioned. *Bhallataka beeja* were cut into pieces and kept in an earthen pot having several fine holes in its bottom. This earthen pot was covered with lid and sealed with clay. Then it is placed over another strong earthen pot smeared with clay and buried underground up to its neck. Place the cowdung cakes around the pot and ignite it. When the cowdung cakes are totally burnt and the seeds have been drained of their oil contents, then the assembly of earthen pot was removed and collected the oil content present in lower earthen pot (22). The collected oil was transferred to a sterile container and then standardized at Sheetal Analytical Laboratory, Pune.

Preparation of Himavan Agad Lepa

The raw ingredients of *Himavan Agad* were shade-dried, and pounded then sieved (120-mesh), and mixed in equal parts using *Khalwa Yantra*. The powdered ingredients were combined with honey and thoroughly ground to create a smooth, soft paste.

Authentication and Standardization

Standardization of all drugs were done as per criteria mentioned in API (*Ayurveda Pharmacopoeia of India*) (23). Raw *Bhallataka Beeja* (marking nuts) were procured from local ayurvedic farm and authenticated at Sheetal Analytical Laboratory, Pune, through macroscopic and microscopic analysis. Ingredients of *Himavan Agad* were procured from Manikarnika Ayurvedic Drug House and authenticated by RCFC-Western Region, Pune. The *Himavan Agad Choorna* and *Madhu* were standardized at the *Rasashastra-Bhaishajya Kalpana Dept.*, Bharati Vidyapeeth (deemed to be university) College of Ayurved.

Method of Animal Experiment

Consent of Institutional Animal Ethical Committee taken before the initiation of the experiment with the project proposal approval no. 04/2024.

Animal experiment was done according to OECD guidelines and CPCSEA guideline.

Details of animals studied

Healthy adult albino mice (6–8 weeks old) were procured from the Central Animal House, Bharati Vidyapeeth (Deemed to be University), Dhankawadi, Pune. A total of 24 mice were included in the study and randomly divided into four experimental groups, with six animals in each group. Each group consisted of three male and three female mice to ensure equal gender distribution.

The animals were housed in well-ventilated polypropylene cages under standard laboratory conditions, with the room temperature maintained between 22°C and 30°C, relative humidity between 50% and 60%, and a controlled 12-hour light/12-hour dark cycle. Standard commercial pelleted feed and distilled drinking water were provided *ad libitum* throughout the experimental period.

Table 1 : Ingredients of Himavan Agad Lepa

S.N.	DRAVYA	BOTANICAL NAME	QUANTITY	PART USED
1	<i>Nyagrodh</i>	<i>Ficus bengalensis</i>	5 gm	Bark
2	<i>Udumbar</i>	<i>Ficus glomerata</i>	5gm	Bark
3	<i>Ashwath</i>	<i>Ficus religiosa</i>	5gm	Bark
4	<i>Plaksha</i>	<i>Ficus lacor</i>	5gm	Bark
5	<i>Vetas</i>	<i>Salix caspera</i>	5gm	Bark/Stem (Twak/Kanda)
6	<i>Haritaki</i>	<i>Terminalia chebula</i>	5gm	Fruit pericarp/pulp (Phala majja)
7	<i>Bibhitaki</i>	<i>Terminalia belerica</i>	5gm	Fruit pericarp/pulp (Phala majja)
8	<i>Amalaki</i>	<i>Embilika officinalis</i>	5gm	Fruit pericarp/pulp (Phala majja)
9	<i>Yashtimadhu</i>	<i>Glycerrhiza glabra</i>	5gm	Root (Moola)
10	<i>Nagapushpa</i>	<i>Mesua ferrea</i>	5gm	Flower
11	<i>Elavaluk</i>	<i>Prunus cerasus</i>	5gm	Seed
12	<i>Jivak</i>	<i>Microstylis musifera</i>	5gm	Tuber/root (Kanda)
13	<i>Rushabhak</i>	<i>Microstylis wallichii</i>	5gm	Tuber/root (Kanda)
14	<i>Raktachandan</i>	<i>Santalum album</i>	5gm	Heartwood (Saara/Kashtha)
15	<i>Padmakashtha</i>	<i>Prunus cerasoides</i>	5gm	Heartwood
16	<i>Utpal</i>	<i>Nymphaea alba</i>	5gm	Flower (Pushpa)
17	<i>Madhu</i>	<i>Honey</i>	Adequate quantity	

The test drug was administered for seven consecutive days according to the study protocol. Each animal was assigned a unique identification number, which was recorded on the cage tag and corresponding experimental records following veterinary examination to ensure proper identification and traceability

Selection of Animals

Mice of 20-25 gm were selected. 50% male & 50% Female were selected. Mice were also kept under observation before application of *Ballataka Taila* they were maintain to remain healthy and free from any infection. Same diet and water were scheduled and provided.

Preparation of mice before applying *Bhallataka Taila*

All 24 mice were prepared for experiment only at desired area that is dorsum of each mice and hair was removed. For identification of groups, each cage were tag with the identifying name. Each mouse was applied with *Bhallataka Taila* one by one at their dorsum. After application procedure, all mice were observed for 24 hours for any sign.

Table 2: Group of Animal Experiments

Group number	Group name	Specification (n=6)
1	CG	Control Group (No application of any drugs)
2	DCG	Disease Control Group (<i>Bhallataka Taila</i> application only)
3	SCG	Standard Control Group (<i>Bhallataka Taila</i> application+Standarddrug-silver nitrate gel (0.2%))
4	TG	Test Group (<i>Bhallataka Taila</i> application + <i>Himavan Agad Lepa</i>)

Dose of *Bhallataka Taila*

Bhallataka Taila was applied topically in a quantity of 0.1mL, sufficient to produce a uniform circular patch measuring approximately 1cm in diameter on the dorsal skin of each mouse. All mice were monitored continuously for 24 hours for any signs of adverse reactions. Skin responses were graded according to the Indian Standard BIS (Bureau of Indian Standards) 1992 guidelines. The test sample and standard drug were applied

topically for 7 consecutive days. Observations for all parameters were recorded following the 7-day treatment period.

Dose calculation of *Himavan Agad Lepa*

As per *Sharangdhar Samhita* (Uttara Khanda 11/3), the thickness of *Vishaghna Lepa* (anti-toxic ointment) should be one-third of an *Anguli* (*utsedha*) (24). However, considering the age and weight of the albino mice, the *Lepa* was applied in a quantity sufficient to cover the entire wound and surrounding inflammation, maintaining a uniform thickness of 1mm over the affected area.

Table 3: Assessment criteria

PARAMETERS	SIGNS	GRADE
1. <i>Raga</i> (Erythema)	No erythema observed	0
	Very slight erythema (barely perceptible)	1
	Well-defined erythema	2
	Moderate observed erythema	3
	Severe erythema (beef redness) to eschar Formation preventing grading of erythema	4
2. <i>Twak sphota</i> (Blisters)	No elevation of skin	0
	Formation of papules	1
	Formation of vesicles (Small blister)	2
	Formation of bullae (Large Blister)	3
	Formation of ulcer	4
3. <i>Shotha</i> (Edema)	No edema	0
	Very slight edema (barely perceptible)	1
	Slight edema (edges of area well-defined by definite raising)	2
	Moderate edema (raised approximately 1mm)	3
	Severe edema (raised more than 1mm and Extending beyond area of exposure)	4

Observations

- On the seventh day of the experiment in mice, after applying *Himavan Agad Lepa*, a significant reduction in erythema was observed with an 87.5% improvement in the test group and 80.5% in the standard group as compared to the disease control group.

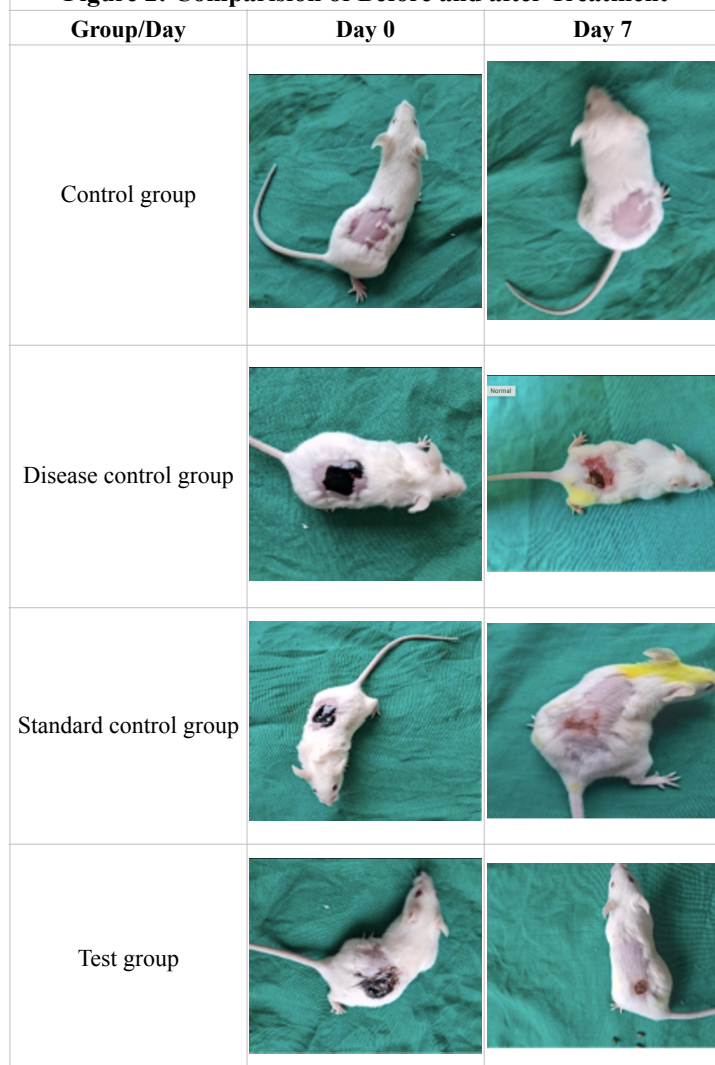
- On day 7 of the experiment in mice, following the application of *Himavan Agad Lepa*, a significant improvement in the blister score was observed with an 89.00% effect in the test group and an 83.33% effect in the standard test group as compared to the disease control group.

- In mice, on the seventh day of the experiment, following the application of *Himavan Agad Lepa*, a significant reduction in the edema score was noted, with a 91.5% effect observed in the test group and an 85% effect in the standard test group as compared to the disease control group.

Figure 1: Drugs used for Experiment



Figure 2: Comparison of Before and after Treatment



Statistical Analysis

Statistical analysis was conducted using R-software and Microsoft excel. Wilcoxon signed rank test for intra group analysis, Mann Whitney test for inter group and Kruskal-Wallis test for histopathology exam were performed, with a significance level set at $P < 0.05$.

Indication for P value

where, p value is < 0.05

- If p value ≥ 0.05 = Non significant
- If p value ≤ 0.05 = Significant
- If p value ≤ 0.01 = Highly significant
- If p value ≤ 0.001 = Extreme Highly significant

Table 4: Comparison of score of Raga (Erythema) between day-0 and day-7 in each group

Group	Day-0 Mean $\pm$ SD	Day-7 MEAN $\pm$ SD	p-value
CG	0 $\pm$ 0	0 $\pm$ 0	No change
DCG	4 $\pm$ 0	2.83 $\pm$ 0.41	0.0313
SG	4 $\pm$ 0	1.50 $\pm$ 0.55	0.0313
TG	4 $\pm$ 0	0.50 $\pm$ 0.55	0.0313

The erythema scores in the Control Group (CG) remained unchanged throughout the study, with a mean score of **0.00 $\pm$ 0.00** on both Day 0 and Day 7; therefore, statistical analysis was not applicable. In the Disease Control Group (DCG), the mean erythema score decreased from **4.00 $\pm$ 0.00** on Day 0 to **2.83 $\pm$ 0.41** on Day 7, and the reduction was statistically significant ($p = 0.0313$). Although a significant reduction was observed, no treatment was administered to this group; therefore, the improvement is attributed to the natural resolution of inflammation rather than any therapeutic intervention. The Standard Group (SG) demonstrated a significant reduction in erythema, with the mean score decreasing from **4.00 $\pm$ 0.00** to **1.50 $\pm$ 0.55** ($p = 0.0313$). Similarly, the Test Group (TG) exhibited the greatest reduction, with the mean score decreasing from **4.00 $\pm$ 0.00** to **0.50 $\pm$ 0.55** ($p = 0.0313$). Overall, both the Standard and Test Groups showed greater improvement in erythema than the Disease Control Group, with the Test Group demonstrating the maximum reduction in erythema by the end of the study.

Table 5: Comparison of score of Twak sphota (Blister) between day-0 and day-7 in each group

Group	Day-0 Mean $\pm$ SD	Day-7 MEAN $\pm$ SD	p-Value
CG	0 $\pm$ 0	0.00 $\pm$ 0.00	No change
DCG	2 $\pm$ 0	1.33 $\pm$ 0.52	0.1250
SCG	2 $\pm$ 0	0.50 $\pm$ 0.55	0.0313
TG	2 $\pm$ 0	0.33 $\pm$ 0.52	0.0313

The blister scores in the Control Group (CG) remained unchanged throughout the study, with a mean score of **0.00 $\pm$ 0.00** on both Day 0 and Day 7; therefore, statistical analysis was not applicable. In the Disease Control Group (DCG), the mean blister score decreased from **2.00 $\pm$ 0.00** on Day 0 to **1.33 $\pm$ 0.52** on Day 7; however, the reduction was not statistically significant ($p = 0.1250$). As no treatment was administered to this group, the observed improvement is attributed to the natural resolution of inflammation rather than any therapeutic intervention. The Standard Control Group (SCG) demonstrated a significant reduction in blister score, with the mean score decreasing from

2.00 ± 0.00 on day 0 to 0.50 ± 0.55 on day 7 ($p = 0.0313$). Similarly, the Test Group (TG) exhibited the greatest reduction, with the mean score decreasing from 2.00 ± 0.00 on day 0 to 0.33 ± 0.52 on day 7 ($p = 0.0313$). Overall, both the Standard Control Group and Test Groups showed greater improvement in blister scores than the Disease Control Group, with the Test Group demonstrating the maximum reduction in blister formation by the end of the study.

Table 6: Comparison of score of *Shotha* (edema) between day-0 and day-7 in each group

Group	Day-0 Mean $\pm$ SD	Day-7 MEAN $\pm$ SD	p-Value
CG	0 $\pm$ 0	0 $\pm$ 0	No change
DCG	3 $\pm$ 0	1.5 $\pm$ 0.55	0.0313
SCG	3 $\pm$ 0	0.5 $\pm$ 0.55	0.0313
TG	3 $\pm$ 0	0.17 $\pm$ 0.41	0.0313

The edema scores in the Control Group (CG) remained unchanged throughout the study, with a mean score of 0.00 ± 0.00 on both Day 0 and Day 7; therefore, statistical analysis was not applicable. In the Disease Control Group (DCG), the mean edema score decreased from 3.00 ± 0.00 on Day 0 to 1.50 ± 0.55 on Day 7, and the reduction was **statistically significant** ($p = 0.0313$). Although a significant reduction was observed, no treatment was administered to this group; therefore, the improvement is attributed to the natural resolution of inflammation rather than any therapeutic intervention. The Standard Control Group (SCG) demonstrated a significant reduction in edema, with the mean score decreasing from 3.00 ± 0.00 to 0.50 ± 0.55 ($p = 0.0313$). Similarly, the Test Group (TG) exhibited the greatest reduction, with the mean edema score decreasing from 3.00 ± 0.00 to 0.17 ± 0.41 ($p = 0.0313$). Overall, both the Standard Control Group and Test Group showed greater improvement in edema than the Disease Control Group, with the Test Group demonstrating the maximum reduction in edema by the end of the study.

Figure 3: Histopathological Study report

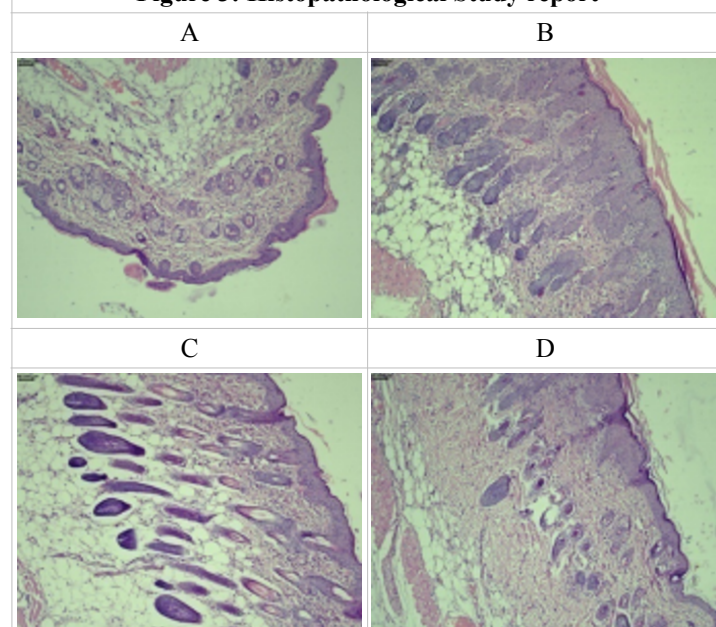


Fig: Cross-sections from the dorsal skin of rats in various groups at day7 using hematoxylin and eosin staining, A) image of control group mice tissue, B) image of DCG mice tissue, C) image of SCG mice tissue, D) image of TG mice tissue. These sections were analyzed to assess the wound healing activity at different group of animal.

The control group exhibited no skin deformities, as there were no signs of dermal reaction or inflammation observed. The Disease Control Group shows the highest scab and granulation tissue formation, indicating delayed or impaired wound healing. The Test Group exhibited a more pronounced reduction in scab and granulation tissue compared to the Standard Control Group and Disease Control Group, indicating a faster and more effective wound healing process and superior tissue recovery. This suggests that the test treatment may provide enhanced therapeutic benefits over the standard treatment.

Discussion

The study confirms that *Bhallataka* (*Semecarpus anacardium* Linn.) exhibits potent dermal toxicity when applied topically, producing severe acute skin reactions such as erythema, blistering, and edema. These findings are consistent with the descriptions of *Bhallataka*-induced skin toxicity in classical Ayurvedic literature and with phytochemical studies reporting that *Bhallataka* contains irritant phenolic compounds including bhallawanols, urushiol derivatives, and anacardol, which are responsible for vesicant and inflammatory effects (25–27).

The disease control group showed persistent severe erythema (mean score 4 on Day 0) and only partial recovery by Day 7, indicating the aggressive and prolonged nature of *Bhallataka*-induced dermatitis. This observation is in agreement with previous reports describing the delayed resolution and persistent inflammatory response associated with *Bhallataka*-induced contact dermatitis (28). Modern management of contact dermatitis primarily involves symptomatic treatment with topical corticosteroids, emollients, antihistamines, and wound care, while no specific antidote exists for *Bhallataka* poisoning (29, 30).

Efficacy of *Himavan Agad Lepa* in Dermal Recovery

Himavan Agad Lepa, a classical Ayurvedic polyherbal formulation, demonstrated significant therapeutic benefit in alleviating *Bhallataka*-induced acute dermal reactions. Compared with the disease control and the standard treatment (0.2% silver nitrate gel), the Test group exhibited markedly reduced erythema, blister formation, and edema by Day 7. The reduction from severe to very mild or absent erythema (mean 0.50), significant healing of blisters (mean 0.33), and near-complete resolution of edema (mean 0.17) indicate potent anti-inflammatory, anti-vesicant, and anti-edematous activity. These findings are based on the present experimental study and therefore do not require citation.

Comparative Analysis with Standard Treatment

Although silver nitrate gel has long been used as a topical antimicrobial agent in wound management and burn care, its role is primarily antimicrobial rather than anti-inflammatory (31,32). *Himavan Agad Lepa* demonstrated comparable or superior efficacy in all evaluated parameters, suggesting a multifactorial mechanism of action. The formulation contains ingredients possessing *Sheeta* (cooling), *Kashaya* (astringent), *Vishaghna* (anti-toxic), and *Pitta-shamaka* properties, which may counteract the *Ushna* and *Tikshna* qualities attributed to *Bhallataka* in Ayurveda (33-35). This observation supports the Ayurvedic principle of *Vyadhi-viparita Chikitsa*, wherein treatment is selected to oppose the pathological process.

Histopathological Correlation

Microscopic evaluation of skin tissues corroborated the clinical findings, with the test group demonstrating organized epidermal regeneration, reduced inflammatory cell infiltration, and enhanced

wound contraction by Day 7. In contrast, the disease control group exhibited persistent inflammatory infiltration and tissue damage. These histopathological findings are original observations from the present study and therefore do not require external references.

Ayurvedic Pharmacological Perspective

The findings support the traditional indications of *Himavan Agad Lepa* described in *Ashtanga Hridaya*, where it is recommended for conditions such as *Visarpa*, *Visphota*, *Daha*, and *Shotha*, all of which share clinical features with *Bhallataka*-induced dermatitis [33]. The synergistic action of its constituent herbs, possessing *Dahahara*, *Vishaghna*, *Shothahara*, and *Raktapitta-hara* properties, may contribute to neutralizing the toxic and inflammatory effects of *Bhallataka* (33–36). The present study highlights the value of scientifically evaluating classical Ayurvedic formulations for the management of toxicological conditions.

Clinical and Research Implications

Given the absence of a specific modern antidote for *Bhallataka*-induced contact dermatitis, the clear efficacy of *Himavan Agad Lepa* in this animal model suggests its potential as a safe and effective therapeutic option in clinical settings. Further clinical trials in affected human populations could establish standardized protocols for its use. Additionally, phytochemical and pharmacodynamics studies to identify the active constituents responsible for anti-inflammatory and wound-healing effects could pave the way for developing novel treatments derived from *Ayurvedic* polyherbal formulations.

Limitations

The study was limited by a small sample size and short duration, which restricts assessment of long-term safety and efficacy. Additionally, it lacked detailed investigation into the molecular mechanisms and active constituents of *Himavan Agad Lepa*.

Further Scope

Future research should focus on larger, longer-term studies including detailed pharmacological and chemical analyses of the formulation. Clinical trials in human subjects are also needed to validate safety and effectiveness for *Bhallataka*-induced dermal reactions.

Conclusion

The study provides compelling preclinical evidence that *Himavan Agad Lepa* is effective in significantly reducing acute dermal inflammation, blistering, and edema induced by *Bhallataka Taila* in albino mice. Its superior performance compared to the standard silver nitrate treatment, supported by histopathological findings, highlights its promise as a potent Ayurvedic therapeutic agent for managing *Bhallataka*-induced dermal reactions. Integrating traditional *Ayurvedic* knowledge with modern experimental validation underscores *Himavan Agad's* potential clinical utility. However, addressing identified research gaps through extended pharmacological studies and human clinical trials is essential for its wider acceptance and application in dermatological toxin management.

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