

**A RANDOMIZED COMPARATIVE CLINICAL STUDY TO DETERMINE THE
EFFICACY OF DADRUKANDVADI LEPA AND DURVADI LEPA IN DADRU****Shubham^{1*}, Ashwini S. G.², Prashanth Bhat³**

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ABSTRACT

Dadru is a common skin condition in Ayurveda, characterized by Kandu (itching), Raga (erythema), Pidaka (eruption), and Utsanna mandala (elevated lesions), clinically correlating with superficial fungal infections like Tinea (dermatophytosis). This study aimed to comparatively evaluate the therapeutic efficacy of two classical topical formulations, Dadrukandvadi Lepa and Durvadi Lepa. A single-blind, randomized comparative clinical study was conducted on 60 subjects diagnosed with Dadru. Subjects were assigned via block randomization into two equal groups (n=30). Group A received Dadrukandvadi Lepa, and Group B received Durvadi Lepa. Both formulations were applied externally with Takra for 20 days, with evaluations at baseline, 10th, and 20th days. Both groups demonstrated highly significant clinical improvements ($p < 0.001$) across all parameters. Group A achieved its highest relief in Rookshata (83.9%) and Kandu (76.0%). Group B achieved outstanding responses in Daha (70.5%), Raga (70.4%), and Utsanna Mandala (69.5%). Inter-group analysis showed Raga was the only parameter with a statistically significant difference ($p = 0.0379$), demonstrating Durvadi Lepa's superior anti-erythema efficacy. Overall mean therapeutic improvement was highly comparable (64.72% in Group A; 64.41% in Group B). Both topical interventions are highly safe, cost-effective, and efficacious. Dadrukandvadi Lepa provides relatively superior action for Kapha-Pitta dominant presentations (pronounced itching and dryness), while Durvadi Lepa is highly indicated when Pitta-Kapha dominates (marked erythema and burning).

KEYWORDS: Dadru; Dadrukandvadi Lepa; Durvadi Lepa; Tinea; Kushta.

INTRODUCTION

In Ayurveda, health is defined by the equilibrium of *Doshas*, *Agni*, *Dhatus*, and *Malas*, serving as the foundation for human well-being.^[1] As the body's largest external organ, the skin is highly susceptible to pathology. In tropical developing nations like India, dermatological disorders have escalated significantly due to hot and humid climates, overcrowding, pollution, urbanization, and synthetic cosmetics.^[2,3]

Ayurvedic classics classify all skin disorders under *Kushta*, subdivided into *Mahakushta* and *Kshudrakushta*. *Dadru* is a stubborn, chronic, and recurring skin

condition (*Anushangini vyadhi*) categorized under *Kshudrakushta* by Acharya Charaka and *Mahakushta* by Acharyas Sushruta and Vagbhata.^[4,5,6,7] Primarily involving *Kapha-Pitta* vitiation that corrupts *Rasa*, *Rakta*, *Twak* and *Lasika*, *Dadru* manifests with *Kandu* (itching), *Raga* (erythema), *Pidaka* (eruptions), and *Utsanna Mandala* (elevated circular lesions).^[5] Clinically, it correlates with *Tinea* (superficial dermatophytosis), caused by *Epidermophyton*, *Microsporum*, and *Trichophyton* thriving in keratinized tissues.^[12]

Among the threefold Ayurvedic treatments (*Shodhana*, *Shamana*, and *Bahiparimarjana*), localized *Bahiparimarjana* via *Lepa* (topical application) is highly rational for *Dadru* as its pathogenesis is confined to the *Bahya Rogamarga*, allowing direct local *Dosha* pacification and rapid action.^[8,9] Both *Dadrukandvadi Lepa* and *Durvadi Lepa* possess *Kusthaghna*, *Krimighna*, *Kandughna*, and *Vranahara* properties.^[10,11] Addressing the need for standardized topical management, this study aimed to determine the independent therapeutic efficacy of *Dadrukandvadi Lepa* and compare its clinical efficacy with *Durvadi Lepa* in managing the signs and symptoms of *Dadru*.

MATERIALS AND METHODS

Data on *Dadru Kushta* and drug pharmacology were compiled from classical Ayurvedic texts, modern dermatological literature, and peer-reviewed journals.

Drug procurement and preparation of formulations

Raw herbal and mineral ingredients for the trial and control formulations were procured from authorized vendors and authenticated by the Department of Dravyaguna, A.L.N. Rao Memorial Ayurvedic Medical College and Hospital, Koppa, Karnataka, India. The authenticated raw drugs for *Dadrukandvadi Lepa* (Table 1) and *Durvadi Lepa* (Table 2) were individually cleaned, shade-dried, pulverized into fine powders (mesh size 80), homogeneously mixed in the specified proportions, and packaged in airtight containers at the Teaching Pharmacy of the Department of Rasashastra and Bhaishajya Kalpana, A.L.N. Rao Memorial Ayurvedic Medical College, Koppa, India. *Takra* (buttermilk), serving as the reconstituting medium, was freshly prepared daily according to classical guidelines by churning fresh curd with one-fourth part water until complete separation and removal of butter.^[12]

Table 1: Ingredients and composition of *Dadrukandvadi Lepa* (per 100 g)

S. No.	Ingredients	Botanical name	Quantity (per 100 g)
1.	Parpunata	<i>Cassia tora</i> Linn.	12.5 g
2.	Bakuchi	<i>Psoralea corylifolia</i> Linn.	12.5 g
3.	Sarshapa	<i>Brassica campestris</i> Linn.	12.5 g
4.	Tila	<i>Sesamum indicum</i> Linn.	12.5 g
5.	Kushta	<i>Saussurea lappa</i> Linn.	12.5 g
6.	Haridra	<i>Curcuma longa</i> Linn.	12.5 g
7.	Daruharidra	<i>Berberis aristata</i> DC.	12.5 g
8.	Musta	<i>Cyperus rotundus</i> Linn.	12.5 g

Table 2: Ingredients and composition of *Durvadi Lepa* (per 100 g).

S. no.	Ingredients	Botanical Name	Quantity (per 100 g)
1.	Durva	<i>Cynodon dactylon</i> Pers.	20 g
2.	Haritiki	<i>Terminalia chebula</i> Retz.	20 g
3.	Chakramarda	<i>Cassia tora</i> Linn.	20 g
4.	Tulsi	<i>Ocimum sanctum</i> Linn.	20 g
5.	Saindhava	Rock Salt	20 g

Study design and ethical clearance

This study was designed as a single-blind, randomized, comparative parallel-group clinical trial. The study protocol complied with the Declaration of Helsinki and received approval from the Institutional Ethics Committee of A.L.N. Rao Memorial Ayurvedic Medical College and Hospital, Koppa, India (Approval No.: ALNAC/IEC/2024-25/424, dated 23/05/2024). The trial was registered prospectively with the Clinical Trials Registry - India (CTRI Registration No.: REF/2025/02/098804). Written informed consent was obtained from all participants prior to enrollment.

Participant selection and eligibility criteria

Sixty eligible patients diagnosed with *Dadru Kushta* were recruited from the Outpatient Department (OPD), Inpatient Department (IPD), and peripheral medical camps of A.L.N. Rao Memorial Ayurvedic Medical College and Hospital, Koppa. Diagnosis was established based on the classical clinical signs and symptoms of *Dadru*, specifically *Kandu* (itching), *Raga* (erythema),

Pidaka (papular eruptions), and *Utsanna Mandala* (elevated circular lesions).^[15]

Inclusion criteria: Patients aged 18 to 60 years of any gender, occupation, or socioeconomic status presenting with the classical clinical features of *Dadru* (both newly diagnosed and previously treated cases) with a disease chronicity of less than 2 years who provided written informed consent.

Exclusion criteria: Patients with uncontrolled systemic or metabolic disorders (such as diabetes mellitus or hypertension), concurrent dermatological disorders (including eczema, psoriasis, or scabies), immunocompromised states, or congenital and hereditary skin diseases.

Randomization and intervention protocol

The 60 enrolled participants were randomly allocated in a 1:1 ratio into Group A (n=30) and Group B (n=30)

using permuted block randomization (15 blocks of size 4).

Group A (Trial Group): Treated topically with *Dadrukandvadi Lepa* mixed with *Takra*.

Group B (Control Group): Treated topically with *Durvadi Lepa* mixed with *Takra*.

For both groups, 2 g of the respective *Lepa* powder per 2 cm × 2 cm of affected lesion area was levigated with sufficient freshly prepared *Takra* to form a smooth paste. The paste was applied uniformly over the lesions in a *Doshaghna* thickness of 0.5 cm once daily in the

morning for 20 consecutive days.^[13] The application was retained for approximately 20 minutes until initial drying occurred and was subsequently washed off with normal tap water.

Clinical assessment criteria

Clinical evaluations were conducted at baseline (Day 0), during treatment (Day 10), and at the completion of the trial (Day 20). Symptom severity for subjective and objective parameters was graded on a 4-point ordinal scale (Grade 0 to Grade 3) adapted from the Kushta Assessment Severity Index (KASI) (Table 3).

Table 3: Grading scale for subjective and objective clinical parameters.

S. No.	Parameters	G0 (None)	G1 (Mild)	G2 (Moderate)	G3 (Severe)
1.	Kandu	No itching	Mild (no disturbance)	Persistent (disturbed work)	Intense (disturbed sleep)
2.	Raga	No discoloration	Slight red	Moderate reddish-brown	Intense brown
3.	Utsanna Mandala	Not visible	Mild visible lesion	Moderate visible lesion	Prominent visible lesion
4.	Daha	No sensation	Mild burning	Persistent burning	Intense burning
5.	Rookshata	No dryness	Minimal dryness	Moderate dryness	Intense dryness
6.	Size of Lesion	No lesion	< 5 cm	5–10 cm	> 10 cm
7.	No. of Lesions	No lesion	1–3 lesions	4–6 lesions	> 7 lesions
8.	No. of Pidaka	No eruptions	1–3 per lesion	4–6 per lesion	> 7 per lesion

Statistical analysis

Compiled clinical data were tested for normality and found to violate parametric assumptions due to the ordinal nature of the clinical grading scales. Consequently, intra-group (within-group) comparisons were analyzed using the non-parametric Wilcoxon Signed-Rank test, and inter-group (between-group) comparisons were evaluated using the Mann-Whitney U test. All statistical analyses were performed using IBM SPSS Statistics software (Version 20.0; IBM Corp.,

Armonk, NY, USA). A p value of less than 0.05 was considered statistically significant.

RESULTS

Both treatment protocols demonstrated comparable overall therapeutic efficacy after 20 days of intervention, with an overall mean symptom improvement of **64.72%** in Group A (*Dadrukandvadi Lepa*) and **64.41%** in Group B (*Durvadi Lepa*) (Table 4; Figs. 1-4).

Table 4: Intra-group and inter-group statistical comparison of subjective and objective clinical parameters in Group A (*Dadrukandvadi Lepa*, n=30) and Group B (*Durvadi Lepa*, n=30) before and after 20 days of treatment.

Assessment Criteria	Group A Mean ± SD (BT)	Group A Mean ± SD (AT)	Group A % Relief	Group B Mean ± SD (BT)	Group B Mean ± SD (AT)	Group B % Relief	Wilcoxon (p)-value (Within Group) ^a	Mann-Whitney (p)-value (Inter-Group) ^b
Kandu	2.50 ± 0.57	0.60 ± 0.62	76.0%	2.17 ± 0.75	0.90 ± 0.71	58.5%	<0.001	0.0992
Raga	2.10 ± 0.71	0.93 ± 0.58	55.7%	2.13 ± 0.86	0.63 ± 0.81	70.4%	<0.001	0.0379
Pidaka	1.73 ± 0.58	0.57 ± 0.57	67.1%	1.80 ± 0.71	0.57 ± 0.68	68.3%	<0.001	0.8357
Utsanna Mandala	2.07 ± 0.58	0.83 ± 0.70	59.9%	1.87 ± 0.63	0.57 ± 0.68	69.5%	<0.001	0.1263
Daha	2.10 ± 0.71	0.73 ± 0.52	65.2%	1.93 ± 0.74	0.57 ± 0.73	70.5%	<0.001	0.1664
Rookshata	1.87 ± 0.90	0.30 ± 0.47	83.9%	1.57 ± 0.86	0.57 ± 0.68	63.7%	<0.001	0.1274
No. of Lesion	1.63 ± 0.81	0.83 ± 0.59	49.1%	1.57 ± 0.68	0.83 ± 0.53	47.1%	<0.001	0.9716
Size of Lesion	2.13 ± 0.68	0.90 ± 0.55	57.7%	1.77 ± 0.73	0.63 ± 0.61	64.0%	<0.001	0.0707

Note: BT = Before Treatment (Day 0); AT = After Treatment (Day 20); SD = Standard Deviation. ^aWilcoxon Signed-Rank test (identical significance of $p < 0.001$ observed in both Group A and Group B); ^bMann-Whitney U test comparing post-treatment scores between Group A and Group B. Statistically significant ($p < 0.05$).

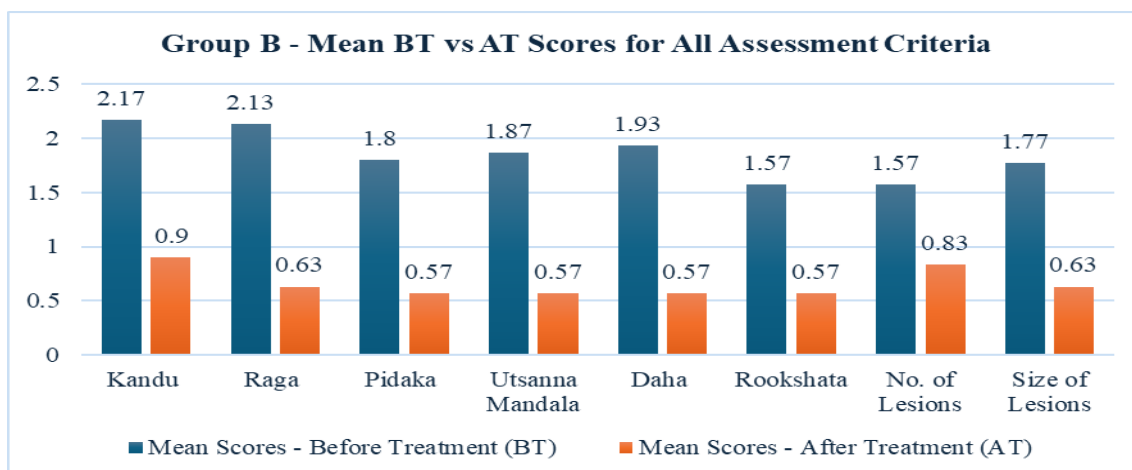


Fig. 1: Intra-group comparison of mean clinical symptom scores before treatment (Day 0) and after treatment (Day 20) in Group A (*Dadrukandvadi Lepa*, n=30).

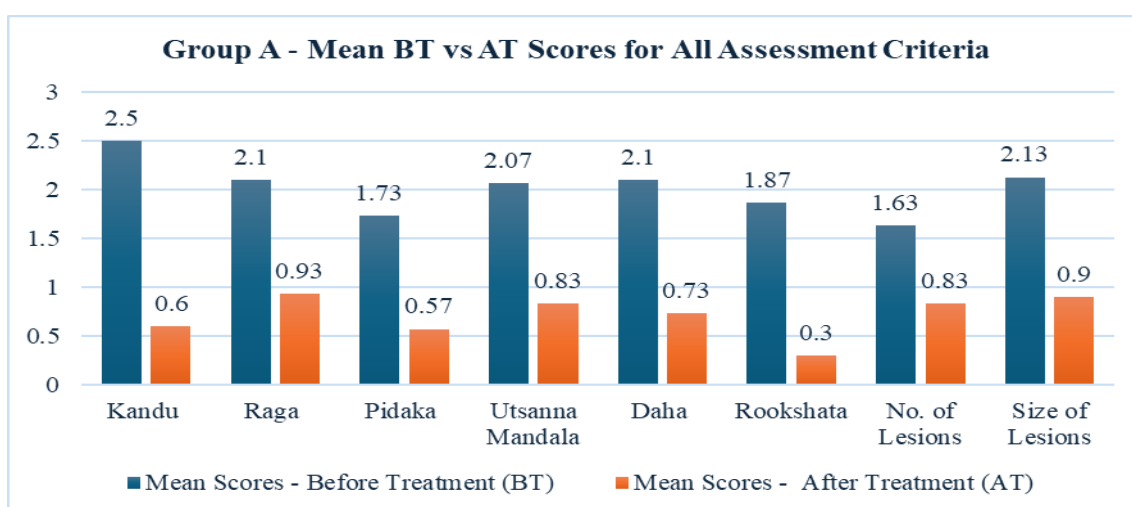


Fig. 2: Intra-group comparison of mean clinical symptom scores before treatment (Day 0) and after treatment (Day 20) in Group B (*Durvadi Lepa*, n=30).

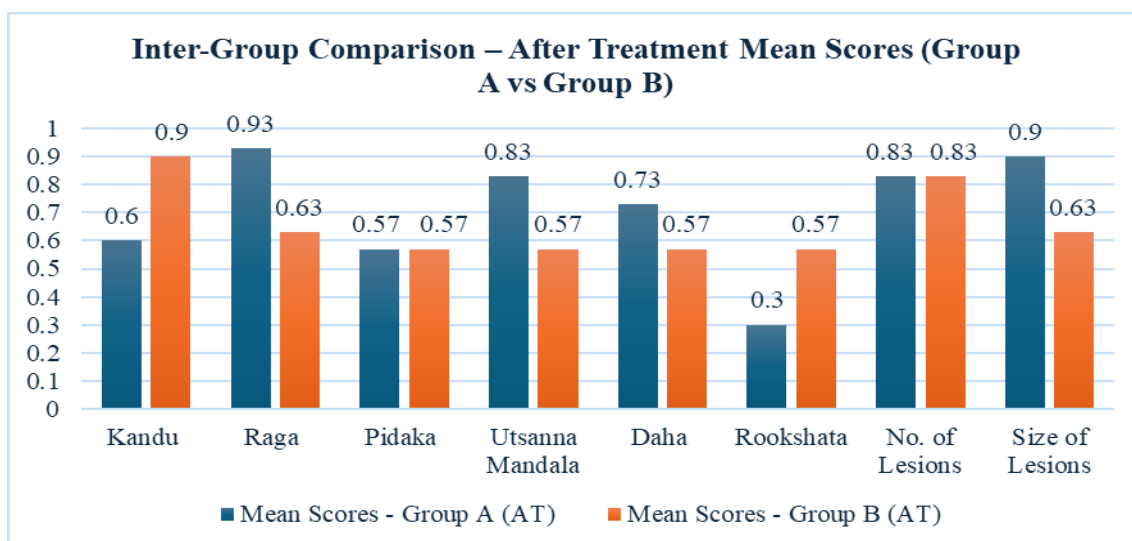


Fig. 3: Inter-group comparison of post-treatment (Day 20) mean clinical symptom scores between Group A (*Dadrukandvadi Lepa*) and Group B (*Durvadi Lepa*).

Intra-group and inter-group clinical efficacy

Within-group analysis using the Wilcoxon Signed-Rank test revealed statistically highly significant improvements ($p < 0.001$) across all eight subjective and objective clinical parameters in both Group A (Fig. 1) and Group B (Fig. 2).

Between-group comparison using the Mann-Whitney U test indicated no statistically significant difference between the two formulations across seven of the eight parameters ($p > 0.05$), demonstrating near-equivalent overall clinical efficacy (Table 4; Fig. 3). However, a statistically significant inter-group difference was observed in the reduction of *Raga* (erythema)

($p = 0.0379$), where Group B achieved superior clinical relief (70.4%) compared to Group A (55.7%).

Conversely, Group A exhibited higher clinical percentage relief in *Kapha*-predominant features, notably *Rookshata* (dryness; 83.9% vs. 63.7% in Group B) and *Kandu* (itching; 76.0% vs. 58.5% in Group B), whereas Group B showed greater percentage reduction in *Pitta*-predominant features, including *Daha* (burning sensation; 70.5% vs. 65.2% in Group A), *Utsanna Mandala* (elevated lesions; 69.5% vs. 59.9%), and lesion size (64.0% vs. 57.7%). Marked clinical resolution of lesions before and after the 20-day intervention in both groups is illustrated in Figs. 5-6.

Overall assessment of results

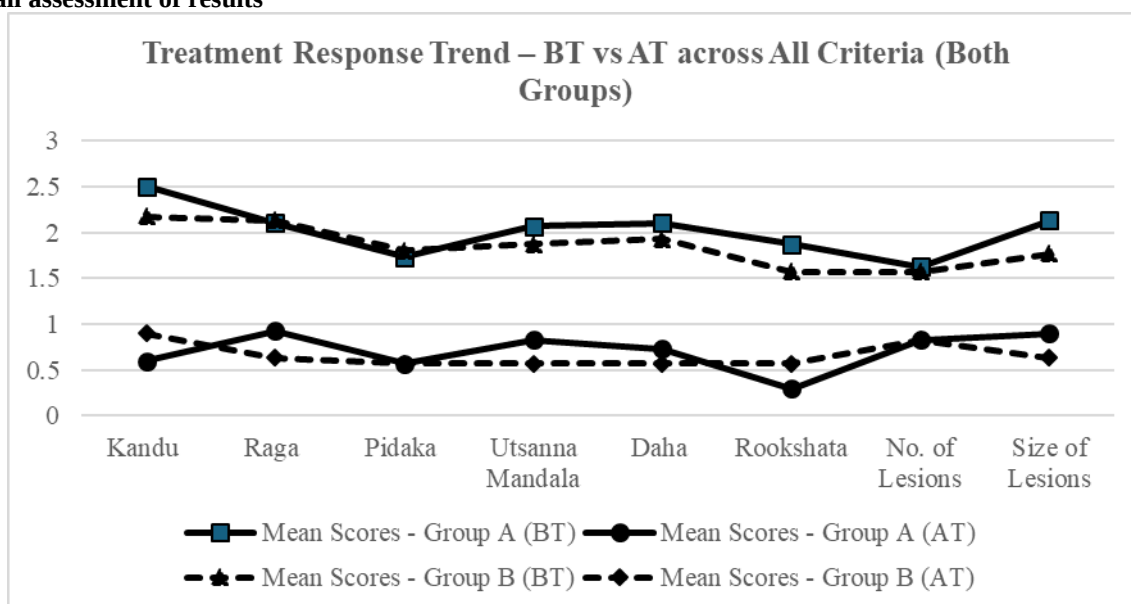


Fig. 4: Comparative overall treatment response trend showing before-treatment (BT) versus after-treatment (AT) mean scores across all clinical assessment criteria in both groups.

Comparative clinical outcomes



Fig. 5: Representative clinical photographs of a patient in Group A (*Dadrukandvadi Lepa*): (a) *Dadru* lesion before treatment (Day 0), and (b) marked resolution of erythema, scaling, and elevated margins after treatment (Day 20).



Fig. 6: Representative clinical photographs of a patient in Group B (*Durvadi Lepa*): (a) *Dadru* lesion before treatment (Day 0), and (b) significant clearance of annular lesions after treatment (Day 20).

DISCUSSION

Kandu is the cardinal subjective symptom of *Dadru*, resulting from the local stagnation of vitiated *Kapha Dosha*, while *Rookshata* indicates localized *Vata* accumulation.^[5] *Dadrukandvadi Lepa* provided a clinically superior response for both symptoms (76.0% and 83.9%, respectively). This therapeutic edge in resolving *Kapha*-driven pruritus is attributed to the presence of *Bakuchi*, *Sarshapa*, and *Chakramarda*.^[10] The *Ushna Virya* and *Katu-Tikta Rasa* of these botanical ingredients allow them to deeply penetrate the epidermal layers to liquefy and clear stagnated *Kapha*. Furthermore, the profound anti-dryness action is driven by the inclusion of *Tila*, which possesses *Snigdha* (unctuous) and *Guru* (heavy) properties, along with *Madhura Vipaka*, directly nourishing the skin and counteracting localized *Vata* to prevent epidermal scaling.^[5,10]

Raga and *Daha* are direct clinical reflections of active *Pitta* and *Rakta* vitiation within the affected skin layers.^[7] *Durvadi Lepa* demonstrated superior clinical relief for burning (70.5%) and proved statistically superior in reducing erythema (70.4%; $p=0.0379$). This targeted efficacy is primarily driven by *Durva*, whose *Sheeta Virya* and *Kashaya-Madhura Rasa* act as powerful localized *Rakta-Prasadana* (blood-purifying) and *Pitta-Shamaka* (*Pitta*-pacifying) agents, rapidly cooling localized heat and resolving inflammatory redness.^[11] In contrast, the highly *Ushna* and *Tikshna* nature of the ingredients in *Dadrukandvadi Lepa* may cause mild localized warmth, which slightly limits its rate of resolving *Pitta*-dominant redness.^[10]

The formation of eruptive papules (*Pidaka*) and elevated circular plaques (*Utsanna Mandala*) indicates localized structural changes involving *Rakta*, *Mamsa Dhatu*, and *Kapha Dosha*.^[6] Both formulations effectively resolved eruptive papules with highly comparable outcomes (67.1% in Group A and 68.3% in Group B), confirming that both *Lepas* possess potent anti-inflammatory, *Krimighna*, and *Kusthaghna* agents, such as *Haridra* in Group A and *Tulasi* in Group B,^[10,11] that prevent

secondary microbial contamination and arrest disease progression.^[2,3] While both formulations contain *Chakramarda*, exerting a *Lekhana* (scraping/keratolytic) action to reduce lesion thickness, *Durvadi Lepa* demonstrated a slightly faster reduction in plaque elevation (69.5% vs. 59.9%), likely due to the synergistic tissue-healing (*Vranaropana*) properties of *Haritaki*.^[11]

Both interventions effectively halted the appearance of new lesions and significantly restricted the peripheral spread of existing annular rings. *Durvadi Lepa* demonstrated a slightly superior ability to restrict lesion diameter (64.0% vs. 57.7%), which is attributed to the *Kashaya* (astringent) nature of *Durva* and *Haritaki*, both of which possess strong *Stambhana* and *Tridosha-shamaka* properties that limit localized inflammatory spread.^[11] Additionally, the use of *Takra* as a levigation base in both groups facilitated transdermal penetration by clearing micro-channel obstruction (*Srotorodha*).^[12,13]

Overall, both formulations demonstrated comparable clinical efficacy ($p>0.05$ across seven of eight parameters), confirming no statistically significant difference in overall therapeutic outcomes (64.72% in Group A vs. 64.41% in Group B). These findings validate classical Ayurvedic literature stating that targeted localized application (*Bahiparimarjana Chikitsa*) successfully bypasses gastrointestinal transit, delivering active phytochemicals directly to the dermal pathology to effectively disrupt the *Samprapti* of *Dadru*.^[8,9]

CONCLUSION

The present clinical study validates the Ayurvedic principles regarding the pathogenesis and management of *Dadru Kushta*. Local external application in the form of *Lepa* (*Bahiparimarjana Chikitsa*) serves as a highly rational therapeutic approach, bypassing gastrointestinal transit to deliver active phytochemicals directly to the affected skin layers. Both *Dadrukandvadi Lepa* and *Durvadi Lepa* are safe, highly effective, economical, and easily applicable topical formulations that significantly reduce the clinical signs and symptoms of *Dadru*.

While their overall therapeutic efficacy is statistically comparable, their targeted action differs based on *Dosha* dominance. *Dadrukandvadi Lepa* is comparatively more effective in reducing *Kandu* (itching) and *Rookshata* (dryness), making it the treatment of choice for *Kapha*-predominant (*Kapha-Pitta*) presentations. Conversely, *Durvadi Lepa* demonstrates superior efficacy in reducing *Daha* (burning sensation), *Raga* (erythema), and *Utsanna Mandala* (elevated plaques), making it the ideal intervention when the clinical picture is dominated by *Pitta* (*Pitta-Kapha*) *Doshas*.

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