



Research Article

A CLINICAL OBSERVATIONAL STUDY TO EVALUATE THE COMBINED EFFECT OF *DADRUGHNA LEPA* AND *PITTAKUSTAHARA KASHAYA* IN MANAGEMENT OF *DADRU* (TINEA)

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ABSTRACT

Dadru is one among the *Kushta* described in the classical text books of Ayurveda which bears greater resemblance with Tinea or Ringworm Infection. It is the commonest single fungus group of infectious skin disorders found in unhygienic conditions of tropical and subtropical countries and most encountered in clinical practice. Unless properly treated they become chronic. *Dadru* is a disease where all the treatment modalities can be applied as per the requirement of the disease condition. Here in this study, patients diagnosed with *Dadru* were treated with *Dadrughna Lepa* externally and *Pittaja Kustahara Kashaya* internally for a period of 30 days and observations were recorded. **Methods:** 50 patients fulfilling the diagnostic and inclusion criteria were considered for this single group study of 30 days for each patient. Periodical assessment done during the course of treatment and observations recorded as per case proforma. The data collected during study were Statistical analysed and resultant overall effect of therapy is noted. **Results:** As a result, Out of 50 patients, highly significant results ($p < 0.05$) were obtained with respect to *Kandu* (Itching) (i.e. 75.61%), *Raga* (Redness)(79.61%), *Daha* (Burning sensation)(83.12%), *Pidaka* (Eruption) (84.21%), *Rookshata* (Dryness)(53.66%), *Udgata Mandala* (elevated lesion) (71.43%), Size and No. of Lesions (67.82%). **Discussion:** Out of 50 patients, 2 patients (4%) were getting No improvement, 4 patients (8%) observed to have Mild improvement, 16 patients (32%) were observed with Moderate improvement and 28 patients (56%) with Marked Improvement. Overall effect of the treatment observed is 75.25%.

KEYWORDS: *Dadru Kusta*, *Darvyadi lepa*, *Pittaja jkustahara Kashaya*, Tenia, Dermatophytes.

INTRODUCTION

Skin is the largest organ of human body. It provides protection to the body in various ways from microbes, abrasion, heat and chemicals. Its size and external location makes it susceptible to a wide variety of disorders. In recent years, there has been a considerable increase in the incidence of skin problems in the tropical and developing countries like India due to various reasons like poverty, poor sanitation, life style, unhygienic, pollution etc. skin is subjected to considerable abuse, careless or purposeful application of thousands of potentially harmful chemicals, exposure to extreme environmental conditions of cold, heat wind and trauma and yet it tolerates all these insults with remarkable equanimity, most of the times when body condition does not favour self repair, numerous diseases can be acquired^[1].

In Ayurveda, *Twacha* word is used for skin. *Twacha* is derived from “*Tvac*” *dhatu*, which means the “cover”. Most of the skin diseases are explained under *Kushta*. It is considered as one of the *Ashta*

Mahagada^[2]. *Dadru* being one among *Kustha* is a *Rasa*, *Raktha* and *Mamsa dhatu pradoshaja vikara*^[4]. *Dadru kusta* is one of the commonly occurring skin diseases which have been included under the *Maha Kushta* by Acharya Sushruta^[3] and Vagbhatha. Majority of the other authors consider it among the *Kshudra kushta*. According to Dalhana, commentary on Sushruta Samhitha classifies *Dadru* into two, *Sitha* and *Asitha*^[3]. *Dadru* is mentioned by Sushruta under *Maha kushta*, must be *Asitha* type of *Dadru* because of its chronicity and terms as *Sankramika vyadhi* (Infectious). Here, *dhatu*s gets affected one after the other which is associated with excessive pruritis and very difficult to cure. *Dadru* which is enumerated by Acharya Charaka under *Kshudra kushta* must be *Sitha* variety because of non involvement of *Tridoshas* (humors)^[3]. It is identified by symptoms such as *Kandu*, *Deerghapratana*, *Utsanna*, *Mandala*, *Raaga*, *Pidakas* with predominance of *Kapha dosha*.

Dadru is one among the *Kushta* described in the classical text books of Ayurveda which bears greater resemblance with *Tinea*. *Tinea* or ringworm is one among the most common skin disorders encountered in the clinical practice. It is a group name for a highly contagious segmented mycelia fungus. It is broadly considered as 'Dermatophytoses' through modern perspective which come under 'Superficial fungal infections of the skin', the most common dermatological manifestation affecting up to 20-25% of world's populations in all age group, it is equally common in men and women. It occurs at any age except *Tinea capitis* which occurs in children mainly. *Tinea* that were previously regarded as geographically limited and considered as non-pathogenic is now being more evident in any part of the world and are now being recovered as opportunistic invaders. Furthermore, in recent years the number of fungi recognized as human pathogens has risen, because of an increasing population of debilitated and immune compromised patients. It is a commonest single fungus group of infections found in an unhygienic conditions especially in tropical and subtropical countries, unless properly treated they become chronic^[5].

Tineas are usually transmitted from person to person by direct contact. Hygiene and health go in parlance. In this regard it is relevant to note that in *Sushruta samhita*, unhygienic condition is mentioned as one of the causative factor for *Kushta*^[6].

Some skin conditions needs *Shodhana*, some needs only *Shamana*, some requires repeated *Shodhana*, *Raktamokshana* etc. *Dadru* is a condition where all the treatment modalities can be applied. Ayurvedic Classics have considered each type of *Kushtha* to be a *Tridoshaja* manifestation. Nonetheless their *Doshik* identity can be established on the basis of dominance of *Dosha* in the *Samprapti* (Pathogenesis). *Dadru* is *pitta kaphaja vyadhi*. Acharya *Sushruta* has mentioned the treatment as '*Shodhana Lepa*' type because external applications form the best way to treat *Kushtha*. Furthermore Acharya *Charaka* has described *Lepana* as '*Sadyah Siddhi Karaka*'. Previously there are many works done either on *Lepa chikitsa* alone or only with internal *Shamana yoga*. Even though the result obtained were good but chances of recurrence was more. Hence the needs for this study using both internal yoga with *Pitta Kustahara Kashaya* and external yoga, *Dadrughna Lepa* is administered and studied for the treatment of *Dadru* to obtain good prognosis.

MATERIALS AND METHODS

Objective of study

To evaluate combined effect of *Dadrughna Lepa* and *Pittakustahara Kashaya* in reduction of *Kandu* (Itching), *Pidaka* (Eruption), *Daha* (Burning sensation), *Rookshata* (Dryness), *Udgata mandala* (Elevated lesion) and *Raaga* (Erythema).

Source of data

Literary source

All Ayurvedic, modern literatures and contemporary texts including the recent medical journals pertaining to the drug and diseases was reviewed for the intended study.

Drug source

The selected *Lepa* for this study is *Dadrughna Lepa* as per *Sharangadhara Samhita*^[7]. This *Lepa* is prepared using *Doorva* (*Cynadon dactylon*) *choorna* (Powder) and *Nisha* (*Curcuma longa*) *choorna* in equal quantity. This *Choorna* is mixed with lime juice just before application to make thick paste and applied to all affected parts of body in thickness of $\frac{1}{4}$ th *Anguli*, twice daily for the period of 30 days.

The selected *Kashaya* is *Pittakustahara Kashaya* as mentioned in *Charaka Samhita Chikitsa Sthana kusta adhyaya*. This *Kashaya* (decoction) is prepared using *Patola* (*Trichosanthes dioica*), *Yastimadhu* (*Glycyrrhiza glabra*), *Lodhra* (*Symplocos racemosa*), *Padmaka* (*Prunus cerasoides*), *Nimba* (*Azadiracta indica*), *Raktachandana* (*Pterocarpus santalinus*). All these drugs are taken in equal quantity and made into course powder.

6 grams of powdered formulation is to be added with 100 ml of water, boiled and reduced to 50ml^[8]. This freshly prepared *Kashaya* is to be taken in cooled condition before food twice daily for 30 days.

Pharmaceutical source

The formulation selected for research work *Pittaja kustahara kashaya* and *Dadrughna Lepa choorna* was prepared in college pharmacy attached to Karnataka Ayurveda Medical College.

Clinical source

Patients suffering from *Dadru* were selected from OPD and IPD of Department of Kayachikitsa at Karnataka Ayurveda Medical College and Hospital, Hoige, Mangalore.

Method of Collection of Data

Sample Size

A minimum of 50 patients fulfilling the diagnostic and inclusion criteria irrespective of their gender, caste, religion, education status and socio-economic status was considered for this single group

study. Treatment started after obtaining informed written consent from all patients.

Treatment Period

Duration of treatment 30 days

Follow up: Once in 15 days

Pre test Assessment – 0 day

1st Assessment – 15th day

Post test Assessment – 30th day

Diagnostic Criteria: The Diagnosis will be based on classical *Lakshanas* (signs) of *Dadru* and the clinical manifestation of *Tinea*.

- *Kandu* (Itching)
- *Raga* (Erythema)
- *Pidaka* (Eruption)
- *Daha* (Burning sensation)
- *Rookshata* (Dryness)
- *Udgata mandala* (Elevated lesion)

Inclusion Criteria

- Patient of either sex between the ages of 16-60 years randomly included for study.
- Patient with history of less than two years of disease origin.
- Patients of all varieties of *Tinea* will be selected without discriminating its area of infection.
- Both fresh and treated cases of *Dadru* will be selected.

Exclusion Criteria

- Patients taking immuno suppressive medications.
- Pregnant women and lactating women.
- Patients suffering with systemic disorders like, auto immune diseases, hypertension etc., which interferes with the course of the treatment, will be excluded.

Intervention

The selected 50 patients of *Dadru* subjected to single group open label clinical study for 30 days with internal administration of *Pittaja Kusta Hara Kashaya* twice daily and local application of *Dadrughna Lepa* twice daily.

Treatment schedule: Single Group Study - Treated with *Pitta Kustahara Kashaya* 96ml twice daily on empty stomach followed by *Dadrughna Lepa* local application twice daily for 30 days.

Preparation of *Dadrughna Lepa*

- *Doorva choorna* (*Cynodon dactylon*, Gramineae) 1 part,
- *Nisha choorna* (*Curcuma longa*, Zingiberaceae) 1 part.
- Mixed with *Kanji* (Rice Gruel Water) or lime juice to prepare thick *Lepa*.
- Application of this fresh *Lepa* over affected area in thickness of 1/3rd of *Anguli* (1 *anguli*-1.905cm), until dry and washed off with fresh water^[7].
- This is to be repeated twice daily for 30 days.

Pitta kusta hara kashaya

- *Yastimadhu*- *Glycyrrhiza glabra*, Fabaceae
 - *Lodhra*- *Symplocos racemosa*, Symplocaceae
 - *Padmakasta*- *Prunus cerasoids*, Rosaceae
 - *Patola patra*- *Trichosanthes dioica*, Cucurbitaceae
 - *Nimba chaal*- *Azadiracta indica*, Meliaceae
 - *Rakta chandana*- *Pterocarpus santalinus*, Fabaceae
- All drugs are taken in equal parts, pounded to course powder and stored. 6 grams of powder taken.
- Added with 8 parts water,
- Boiled and reduced to 1/4th part and filtered and cooled^[8].
- This *Kashaya* is administered at 50ml BID dose for 30 days.

Laboratory Investigation

No laboratory investigations are needed for diagnosis and for assessment of disease. However specific necessary investigations are carried out in required cases to rule out other systemic diseases or complications.

Assessment Criteria

The condition of patient with respect to disease was assessed before starting treatment based on *Lakshanas*, detailed history and physical examination. The changes during treatment noted during follow-up and after treatment were noted. The documentation was done in case proforma. The improvement in the patient was assessed based on the *Lakshanas* with respect to subjective parameters^[9].

For Assessment, grading was given to *Lakshanas* according to their severity before starting treatment, during treatment follow-up and post treatment follow-up^[10].

Table 1: Grading of Subjective Parameters

S. no	Parameter	Grade 0	Grade 1	Grade 2	Grade 3
1	<i>Kandu</i> (Itching)	No <i>Kandu</i>	Mild (No disturbance while working)	Moderate (Disturbs work)	Severe (Disturbs sleep)
2	<i>Raga</i> (Erythema)	Normal skin colour	Mild redness (pink to reddish)	Moderate red	Severe / deep brown (severe inflammation with erythematous base)
3	<i>Pidaka</i> (Eruption)	No <i>Pidaka</i>	<i>Alpa pidaka</i> (comedones, occasional papules)	<i>Madhyama pidaka</i> (papules, comedones, few pustules)	<i>Bahu pidaka</i> (predominant pustules, nodules, abscess)
4	<i>Daha</i> (Burning sensation)	No <i>Daha</i>	Mild <i>Daha</i>	Moderate <i>Daha</i>	Severe <i>Daha</i>
5	<i>Rookshata</i> (Dryness)	No <i>Rookshata</i>	Mild <i>Rookshata</i>	Moderate <i>Rookshata</i>	Severe <i>Rookshata</i>
6	<i>Udgata mandala</i> (Elevation of lesion)	No <i>Mandala</i>	Mild <i>Mandala</i> (Visible lesion)	Moderate <i>Mandala</i>	Severe <i>Mandala</i> (Evident lesion with discharge)

Statistical Analysis

- Statistical analysis will be done using SPSS package version 22.
- All the qualitative variables are summarized using frequency and percentages. The quantitative variables are summarized using mean and standard deviation, median and interquartile range (Q1, Q3).
- Data needs to be analyzed by using normal distribution then performing parametric and non-parametric test. Since all subjective variables (itching, erythema, dryness, burning sensation) are qualitative.
- Data performing Willcoxon Sign –Rank Test.

Assessment of Overall Effect of the Therapy

For subjective parameters each symptoms has been graded with following grading method [10].

Table 2: Assessment of overall effect of therapy

S. no	Symptoms/ complaints (severity)	Scores
1.	No symptoms/ complaints	0
2.	Mild symptoms/ complaints	1
3.	Moderate symptoms/ complaints	2
4.	Severe symptoms/ complaints	3

Table 3: Criteria for Assessing Total Effect

Criteria	Result (overall response of treatment)
Complete remission (Excellent)	100%
Marked improvement (Very good)	Above 75%
Moderate improvement (Good)	51-75%
Mild improvement (Average)	26 – 50%
No improvement (Poor)	0 – 25%

OBSERVATION AND RESULTS

The overall observations made in this study led to conclusion that, maximum no. of patients (28%) were from age group of 29-38 years. While, 26% of patients were of age group i.e. 39-48 years. This is the age group when individual is more active, enthusiastic and enjoys the various *Nidanas* of

Kushtha. Female predominance (52%) was evident from the table. Actually there is no relation of sex with this disease. Maximum number of patients i.e. 42% had completed Graduation, 40% had completed secondary (Pre University), which reveals the contagious nature of disease. Maximum number of

patients i.e., 82% was from *Anupa Desha*. Warm and humid climate serves as aggravating factor. Maximum no. of patients i.e. 30% were employed, which indicates the communicable nature of disease. Maximum no. of patients i.e. 36% were from middle class hence did not show any significant relationship with socio-economical status. 66% had insidious onset and the chronicity was due to pure negligence of the patients during initial stages of disease. 42% reported the aggravation of disease in summer season and 20% stated that the symptoms persisted in all seasons seasonal variations have definite relation with symptoms of *Dadru*. 48% of patients gave past history of *Dadru* and rest of patients had other skin related issues in past which means the skin related health was poor even in past. 78% were non-vegetarian, 22% were vegetarians. Diet has no influence on disease manifestation and its progression. 46% of them were indulged in both mental and physical works. 26% of patients had history of smoking regularly, 16% each with addiction to tea and coffee, 14% with alcohol. *Pitta vridhi* takes place because of indulgence in these *Nidanas* (etiological factors), hence they can be termed as strong predisposing factors for progression of disease. 46% of patients had family history of *Dadru* and other skin related diseases, proves the contagious nature of disease. Sleep disturbances are observed in 46% patients mostly due to pruritis. 42% had constipated bowel habits, as Constipation might be one of predisposing factor for the manifestation of *Kusta* as it vitiated Agni and creates *Amavisha*. *Vata-pittaja prakruti* were 48%, *Vata kaphaja prakruti* were 40%, whereas 12% were of *Pitta kaphaja* predominance. Hence the prognosis was good. 50 % each of patients were *Madhyama* (average) and *Pravara satva*. 62% of patients were of *Madhyama sara*, 36% were of *Pravara sara*. 80% were of *Madhyama satmya*, 12 % were of *Heena satmya* and 8% with *Sama sathya* conditions. 50% belonged to *Madhyama samhanana*. Obesity being one of the predisposing factors for dermatophytes, in

this study, 46% patients was obese. In 70% of patient *Abhyavaharana shakti* was *Pravara*, In 60 % of patients *Jarana shakti* was *Madhyama*. 84% of patients followed *Vishamashana*, 70% had habit of *Garista Bhojana*, 72% were observed to have been following *Asatmya Bhojana* which indicates the *aharaja nidanas*. Aggravation of symptoms of *Dadru* was observed to have strong relationship with various *Viharas* i.e. 28% of patients had history of using excessive long wear cosmetics, 36% had history of living in polluted environment, 70% had history of exercising after meals, 58% had history of day sleep, 42% had exposure to sunlight after meals, 92% had history of wearing clothes immediately after bath, 74% were living in unhygienic conditions, being in humid climate region; 94% of patients had habit of drinking cold water after exercise or exposure to sunlight. 2% had lesions on scalp, 14% had lesions on face, 32% had lesions on neck, 46% had lesions on limbs, 40 % had lesions on trunk, and 26% had lesions on groin region. The distribution of lesions in present study may have been observed due to involvement of various aggravating factors. In 62% of cases, the lesions were observed to be Asymmetrical and in 38% Symmetrical. As per modern view, presentation of Dermatophytes may be asymmetrical or symmetrical. In 68% of cases, lesion was observed to be of annular plague with erythematous base, in 26% presentation involved annular plaques with peripheral papules or vesicles. In most of cases, manifestation of Dermatophytes was observed to be of superficial origin presented as annular plague with erythematous base. 90% of patients had grouped arrangement of lesions which denotes the spreading and progressive nature of disease.

In the present study, 50 patients suffering from *Dadru* fulfilling the inclusion criteria were studied and were randomly selected. Each patient was observed thoroughly and noted neatly. The observations are recorded and necessary charts and graphs were made.

Table 4: Effect of treatment on *Kandu* in *Dadru*

Percentage of improvement w.r.t. <i>Kandu</i>					
Grading scale		Before treatment		After treatment	
		Patients score	Percentage	Patients score	Percentage
No symptoms	0	0	0%	24	48%
Mild symptoms	1	2	4%	22	44%
Moderate symptoms	2	23	46%	4	8%
Severe symptoms	3	25	50%	0	0%
Total		50	100%	50	100%

Symptom	Mean score			%	S.D (±)	S.E (±)	Wilcoxon Z Value	p value
	BT	AT	BT-AT					
Kandu	2.46	0.60	1.86	75.61	0.495	0.071	6.15	<0.05

Effect on *Kandu*

- This study consisting of 50 patients of *Dadru* with *Kandu* revealed the result of it as shown in the table No.4.
- Statistical analysis showed that the mean score which was 2.46 in before treatment, was reduced to 0.60 the after treatment with 75.61% improvement, and there is a statistically significant change. (P<0.05)
- Results are graphically represented in figure No 1.

Table 5: Effect on *Raga* in *Dadru*

Percentage of improvement w.r.t. <i>Raga</i>					
Grading scale		Before treatment		After treatment	
		Score of patients	percentage	Score of patients	percentage
No symptoms	0	2	4%	33	66%
Mild symptoms	1	11	22%	14	28%
Moderate symptoms	2	19	38%	3	6%
Severe symptoms	3	18	36%	0	0%
Total		50	100%	50	100%

Symptom	Mean score			%	S.D (±)	S.E (±)	Wilcoxon Z Value	p value
	BT	AT	BT-AT					
Raga	2.06	0.42	1.64	79.61	0.802	0.115	5.96	<0.05

Effect on *Raga*

- This study consisting of 50 patients of *Dadru* with *Raga* revealed the result of it as shown in the table No 5.
- Statistical analysis showed that the mean score which was 2.06 in before treatment, was reduced to 0.42 the after treatment with 79.61% improvement, and there is a statistically significant change. (P<0.05)
- Results are graphically represented in figure No 2.

Table 6: Effect on *Pidaka* in *Dadru*

Percentage of improvement w.r.t. <i>Pidaka</i>					
Grading scale		Before treatment		After treatment	
		score	percentage	score	percentage
No symptoms	0	8	16%	41	66%
Mild symptoms	1	13	26%	14	28%
Moderate symptoms	2	24	48%	3	6%
Severe symptoms	3	5	10%	0	0%
Total		50	100%	50	100%

Symptom	Mean score			%	S.D (±)	S.E (±)	Wilcoxon Z Value	p value
	BT	AT	BT-AT					
Pidaka	1.52	0.24	1.28	84.21	0.784	0.112	5.51	<0.05

Effect on *Pidaka*

This study consisting of 50 patients of *Dadru* with *Pidaka* revealed the result of it as shown in the table No 6.

- Statistical analysis showed that the mean score which was 1.52 in before treatment, was reduced to 0.24 the after treatment with 84.21% improvement, and there is a statistically significant change. ($P < 0.05$)
- Results are graphically represented in figure No3.

Table 7: Effect on *Daha* in *Dadru*

Percentage of improvement w.r.t. <i>Daha</i>					
Grading scale		Before treatment		After treatment	
		Score	Percentage	Score	percentage
No symptoms	0	8	16%	39	78%
Mild symptoms	1	13	26%	9	18%
Moderate symptoms	2	23	46%	2	4%
Severe symptoms	3	6	12%	0	0%
Total		50	100%	50	100%

Effect on *Daha*

Symptom	Mean score			%	S.D (±)	S.E (±)	Wilcoxon Z Value	p value
	BT	AT	BT-AT					
<i>Daha</i>	1.54	0.26	1.28	83.12	0.784	0.112	5.57	<0.05

- This study consisting of 50 patients of *Dadru* with *Daha* revealed the result of it as shown in the table No 7.
- Statistical analysis showed that the mean score which was 1.54 in before treatment, was reduced to 0.26 the after treatment with 83.12% improvement, and there is a statistically significant change. ($P < 0.05$)
- Results are graphically represented in figure No4.

Table 8: Effect on *Rookshata* in *Dadru*

Percentage of improvement w.r.t. <i>Rookshata</i>					
Grading scale		Before treatment		After treatment	
		Patients' score	percentage	Patients' score	percentage
No symptoms	0	0	0%	5	10%
Mild symptoms	1	1	2%	35	70%
Moderate symptoms	2	25	50%	8	16%
Severe symptoms	3	24	48%	2	4%
Total			100%	50	100%

Symptom	Mean score			%	S.D (±)	S.E (±)	Wilcoxon Z Value	p value
	BT	AT	BT-AT					
<i>Rookshata</i>	2.46	1.14	1.32	53.66	0.621	0.089	5.96	<0.05

Effect on *Rookshata*

- This study consisting of 50 patients of *Dadru* with *Rookshata*: revealed the result of it as shown in the table No.8.
- Statistical analysis showed that the mean score which was 2.64 in before treatment was reduced to 1.14 the after treatment with 53.66% improvement, and there is a statistically significant change. ($P < 0.05$)
- Results are graphically represented in figure No 5.

Table 9: Effect on Udgata Mandala in Dadru

Percentage of improvement w.r.t. Udgata mandala					
Grading scale		Before treatment		After treatment	
		Patient's score	percentage	Patient's score	percentage
No symptoms	0	0	0%	26	52%
Mild symptoms	1	6	12%	18	36%
Moderate symptoms	2	33	66%	6	12%
Severe symptoms	3	11	22%	0	0%
Total		50	100%	50	100%

Symptom	Mean score			%	S.D (±)	S.E (±)	Wilcoxon Z Value	p value
	BT	AT	BT-AT					
Udgata Mandala	2.10	0.60	1.50	71.43	0.647	0.092	6.03	<0.05

Effect on Udgata Mandala

- This study consisting of 50 patients of *Dadru with Udgata Mandala* revealed the result of it as shown in the table No. 9.
- Statistical analysis showed that the mean score which were 2.10 in before treatment was reduced to 0.60 the after treatment with 71.43% improvement, and there is a statistically significant change. (P<0.05)
- Results are graphically represented in figure No.6.

Table 10: Effect on Size of Lesion in Dadru

Percentage of improvement w.r.t. Size of Lesion					
Grading scale		Before treatment		After treatment	
		Patients' score	percentage	Patients' score	percentage
No symptoms	0	1	2%	28	56%
Mild symptoms	1	17	34%	17	34%
Moderate symptoms	2	26	52%	4	8%
Severe symptoms	3	6	12%	1	2%
Total		50	100%	50	100%

Symptom	Mean score			%	S.D (±)	S.E (±)	Wilcoxon Z Value	p value
	BT	AT	BT-AT					
Size of Lesion	1.74	0.56	1.18	67.82	0.560	0.080	5.90	<0.05

Effect on Size of Lesion

- This study consisting of 50 patients of *Dadru with Size of Lesion* revealed the result of it as shown in the table No. 10.
- Statistical analysis showed that the mean score which was 1.74 in before treatment was reduced to 0.56 the after treatment with 67.82% improvement, and there is a statistically significant change. (P<0.05)
- Results are graphically represented in figure No.7.

Table 11: Overall effect of treatment

Overall Effect of Treatment		
Grading	Relief in Percentage	Relief in Patients
No Improvement	0 - 25%	2
Mild Improvement	26 - 50 %	4
Moderate Improvement	51 - 75%	16
Marked Improvement	76 - 100 %	28

Combined Effect of Dadrughna Lepa and Pittaja Kushtha Hara Kashaya on Dadru

Out of 50 patients in this study, Overall effect of treatment in Dadru observed are; Highly significant results obtained at $p < 0.05$ were obtained with respect to *Kandu* (75.61%), *Raga* (79.61%), *Daha* (83.12%), *Pidaka* (84.21%), *Rookshata* (53.66%), *Udgata Mandala* (71.43%), Size and No. of Lesions (67.82%).

Here in this study, 2 patients (4%) did not show any improvement, 4 patients (8%) were observed with Mild improvement, 16 patients (32%) showed Moderate improvement and 28 patients (56%) showed Marked Improvement. Overall effect of the treatment was 75.25%.

DISCUSSION

Considering the prodromal symptoms of *Dadru*, subjective criteria were graded. In this study during the preliminary examination of patients, 100% of patients had *Kandu*, *Raga* and *Rookshata*. 92% presented with *Pidakas* of different colour variations with respect to severity/ origin/ extent of disease. 90% of patients had *Daha*. 98% were observed to have *Udgata Mandala*. 58% of patient did not observe to have any *Srava* (discharge) from the lesion during scratching, 20% had blood discharge, 12% had watery discharge, and 10% had pus discharge during scratching at the site of lesion due to pruritis.

Here the subjective graded parameters are subjected to statistical evaluation using Wilcoxin Sign Rank Test to evaluate the differences between before and after treatment and thereby to know the percentage of improvement.

The effect of therapy on the individual signs and symptoms in each group is being discussed here as follows:

Kandu

Kandu manifests during *Poorvaroop*a stage of *Dadru* and continues to be part of disease^[11]. Here

manifestation of *Kandu* is due to involvement of vitiated *Kapha* and *Adravroopa pitta*. Most of the drugs used in this study processes *Kapha-pitta Shamaka* and *Kandughna* properties. Hence, during post treatment follow-up, 75.61% of improvement was observed post treatment with respect to *Kandu*. As *Kandu* is the most troublesome symptom with regard to *Dadru kusta*, the relief with *Kandu* would benefit quick healing of lesions.

In the present study it was observed that out of 50 patients, before treatment 25 (50%) patients had severe *Kandu*, 23 (46%) patients had moderate *Kandu* and 2 (4%) patients had mild *Kandu* and after treatment 22 (44%) patient had mild *Kandu* and in 24 (48%) patients *Kandu* was absent. The result obtained on *Kandu* showed statistically highly significant result with 'P' value < 0.05 .

Raga

Raga is due to vitiation of *Pitta dosha*. Most of the drugs in this study processes *Pitta hara* property. The reduction of redness in and around lesions was observed during first follow-up of patient's itself, which later resulted in complete pacification. 79.61% of improvement was observed with regard to *Raga* during post treatment follow-up.

In the present study it was observed that out of 50 patients, before treatment 18 (36%) patients had severe *raga*, 19 (38%) patients had moderate *raga*, 11 (22%) had mild *raga* and after treatment 14 (28%) patients had mild *raga* and in other 33 (66%) patients *raga* was absent. The result obtained on *raga* showed statistically highly significant result with 'P' value < 0.05 .

Action of Dadrughna lepa and Pitta kushtha hara drugs in pacification of Kandu and Raga

All drugs acts as *Pitta shamaka*, Except *Yastimadhu* all drugs act as *Kapha shamaka*, all the drugs except *Lodhra* and *Raktachandana* possess *Kandughna* properties.^[12-16]

Table 12: Doshaghna and Kandughna Properties of Drugs

Sl no	Drugs	<i>Kapha shamaka</i>	<i>Pitta shamaka</i>	<i>Kandughna</i>
1.	<i>Durva</i>	+	+	+
2.	<i>Nisha</i>	+	+	+
3.	<i>Patola</i>	+	+	+
4.	<i>Yastimadhu</i>	-	+	+
5.	<i>Lodhra</i>	+	+	-
6.	<i>Padmaka</i>	+	+	+
7.	<i>Nimba</i>	+	+	+
8.	<i>Rakta chandana</i>	+	+	-

Pidaka

Pidakas manifest due to vitiation of mainly *Pitta Dosha* with involvement of *Rakta* and *Mamsa*. The treatment for *Pidaka* by pacification of vitiated *Rakta* with administration of *Rakta Shodhaka*, *Rakta Sthambaka*, *Vrana Ropaka* and *Shotha Hara* drugs was carried out in this study. 84.21% of improvement was observed during post treatment follow-up with regard to *Pidakas*.

In the present study it was observed that out of 50 patients, before treatment 5 (10%) patients had severe *Pidakas*, 24 (48%) patients had moderate *Pidakas*, 13 (26%) patients had mild *Pidakas* and in 8 (16%) patients, the *Pidakas* were not visible, After treatment 14 (28%) patients had mild *Pidakas* and in 41 (66%) patients *Pidakas* were absent. The result obtained on *Pidaka* showed statistically highly significant result with 'P' value <0.05.

Action of *Dadrughna lepa* and *Pitta kushtha hara Kashaya* in management of *Pidaka*

All the drugs possess *Rakta Shodhaka* and *Rakta Sthambhaka* properties. *Nisha*, *Patola*, *Lodhra*, *Nimbi*, *Raktachandana* possesses *Shotha hara gunas*.^[12-16].

Table 13: *Rakta-Shodhaka*, *Rakta-Sthambaka*, *Shotha-Hara* properties of drugs

Sl no	Drugs	<i>Rakta Shodhaka/Rakta Sthambhaka</i>	<i>Shotha hara</i>
1.	<i>Durva</i>	<i>Raktasthambhaka</i>	-
2.	<i>Nisha</i>	<i>Raktashodhaka</i>	+
3.	<i>Patola</i>	<i>Raktashodhaka</i>	+
4.	<i>Yastimadhu</i>	<i>Raktashodhaka</i>	-
5.	<i>Lodhra</i>	<i>Raktasthambhaka</i>	+
6.	<i>Padmaka</i>	<i>Rakta shodhaka</i>	-
7.	<i>Nimba</i>	<i>Raktashodhaka</i>	+
8.	<i>Raktachandana</i>	<i>Raktashodhaka</i>	+

Daha

Daha is mainly influenced by vitiation of *Ushna* and *Teekshna guna* of *Pitta*. All the drugs belong to *Dadrughna Lepa* and *Pitta kustahara Kashaya* have *Pitta shamana* property and specifically *Raktachandana*, *Durva*, *Yastimadhu*, *Nimba* and *Padmaka* exhibits *Daha Prashamana* action^[13,14,15]. Hence 83.12% improvement was observed during post treatment follow-up with respect to *Daha*.

In the present study it was observed that out of 50 patients, before treatment 6 (12%) patients had severe *Daha*, 23 (46%) patients had moderate *Daha*, 13 (26%) patients had mild *Daha* and *Daha* was absent in 8 (16%) patients and after treatment, 2 (4%) had moderate *Daha*, 9 (18%) patients had mild *Daha* and in 39 (78%) patients *Daha* was absent. The result obtained on *Daha* showed statistically highly significant result with 'P' value <0.05.

Udgata Mandala and Size of Lesion

Annular ulcerative lesions with elevated edges are one among the characteristic features of *Dadru*. The formulation of drugs containing *Vrana ropaka* properties was selected for this study. 71.43% of improvement was observed during post treatment follow-up with respect to *Udgata Mandala* and 67.82% improvement with respect to Size of Lesion was observed.

In the present study it was observed that out of 50 patients, before treatment 11 (22%) patients had severe *udgata Mandalas*, 33 (66%) patients had moderate *Udgata mandalas* and 6 (12) had mild *Udgata mandals* and after treatment 6 (12%) had moderate *Udgata mandala*, 18(36%) patients had mild *udgata mandalas* and in 26 (52%) patients *Udgata mandalas* were absent. The result on *Udgata mandala* showed statistically highly significant result with 'P' value <0.05.

In the present study it was observed that out of 50 patients, before treatment 6 (12%) patients had severely increased size of lesion, 26 (52%) patients had moderate sized lesions and 17 (34%) patients had mild sized lesions and 1 (2%) had no / very mild sized lesion and after treatment 1 (2%) had severely sized lesion, 4 (8%) had moderate sized lesion 17 (34%) patients had mild sized lesions and in 28 (56%) patients lesions were absent. The result obtained on size of lesion showed statistically highly significant result with 'P' value <0.05.

Table 14: Drugs with Kushtaghna and Vrana Ropana properties

Sl no	Drugs	Kushtaghna	Vranaropana properties
1.	<i>Durva</i>	+	<i>Vrana ropana</i>
2.	<i>Nisha</i>	+	<i>Vranashodhana, Vranaropana</i>
3.	<i>Patola</i>	+	<i>Vrnaropana</i>
4.	<i>Yastimadhu</i>	+	<i>Vranashotahara, Charmarogahara</i>
5.	<i>Lodhra</i>	+	<i>Vrana ropana</i>
6.	<i>Padmaka</i>	+	<i>Amapachaka, Varnya</i>
7.	<i>Nimba</i>	+	<i>Vrana shodhana vrana ropana</i>
8.	<i>Raktachandana</i>	+	<i>Twakdosha hara</i>

Overall Assessment of Results

Overall assessment reveals that out of 50 patients, maximum 28 (56%) patients got marked relief and 16 (32%) patients got moderate relief, 4 (8%) got mild improvement, 2 (4%) did not get any improvement. Overall effect of treatment is 75.25%.

Hence the combined usage of *Dadrughna Lepa* and internally *Pitta Kustahara Kashaya* is found to be very effective in managing all most all types of *Dadru Vis-a-Vis Tinea*.

On the basis of the observations made in the clinical study, the following conclusions were drawn

Dadru is classified under *Kshudra Kushta*. This is a type of skin disease which progresses slowly, very troublesome in nature and distressing to the patients. This disease can be equated with superficial fungal infections of skin i.e. *Tinea* infections of skin on basis of congruency in presenting symptomatology.

Superficial fungal infections are the most common fungal infections. According to World Health Organization (WHO), the prevalence rate of superficial Mycotic infection worldwide has been found to be 20-25%.

The occurrence of fungal infection is common in all age groups and equal in both sexes. However teenagers are most likely to get affected with this disease due to more activeness in their routine with more exposure to unhygienic conditions of living and work environment.

Dadru is chronic in nature. *Rasa* and *Rakta* are involved as *Dushyas*. *Rasahvaha*, *Raktavaha* and *Swedavaha srotas* are involved in disease pathology.

Due to high prevalence of this disease, in view of finding a way for its containment, this clinical study was taken-up. Various clinical trials in past were done with either internal yoga alone or *Lepa* alone was not much successful in managing this disease and was resulted in high rate of recurrences. Hence this study with *Pittakusta hara Shaman kashaya* yoga internally twice daily 50 ml each time empty stomach and *Dadrughna lepa* twice daily in *Doshaghna*

thickness made into paste with lime juice for local application was undertaken. For tropical application of medicines, the vehicle of application also plays a major role in pacification of symptoms of disease.

CONCLUSION

Overall effect of treatment in *Dadru* observed are; Highly significant results obtained at $p < 0.05$ were obtained with respect to *Kandu* (75.61%), *Raga* (79.61%), *Daha* (83.12%), *Pidaka* (84.21%), *Rookshata* (53.66%), *Udgata Mandala* (71.43%), Size and No. of Lesions (67.82%).

Here in this study, 2 patients (4%) did not show any improvement, 4 patients (8%) were observed with Mild improvement, 16 patients (32%) showed Moderate improvement and 28 patients (56%) showed Marked Improvement. Overall effect of the treatment was 75.25%.

Suggestions for Further Study

- Dadru Kusta* with chronic origin and insidious onset, most of the times were observed to recurrence. Hence the treatment plan involving series of *Shodhana* therapy after *Samyak snehana*, *swedana* has to be adopted, which followed by long term *Shaman chikitsa*, to avoid recurrences.
- With application of *Lepa* for few minutes a day will surely result in temporary benefits from irritating symptoms such as itching and burning sensation, but most of the patients with severe pruritis find it annoying when the itching recurs during the rest of day. So formulation which can be applied on skin for longer duration which pacifies troublesome symptoms of *Daha* and *Kandu* has to be formulated, which should be devoid of stickiness, bright colour which stains clothes and should have good fragrance for compliance of patients.
- For exact diagnosis and to find out action of drugs, Histopathological studies should be carried out prior, during and after study.

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Annexure

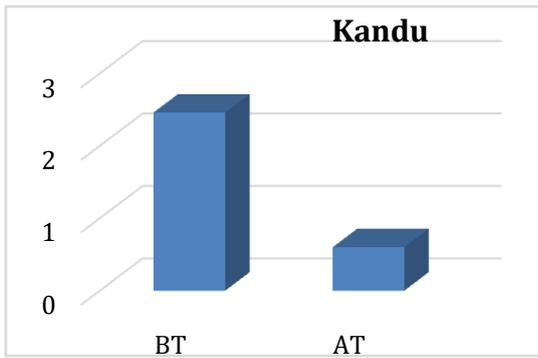


Figure No 1: Effect of treatment on *Kandu*

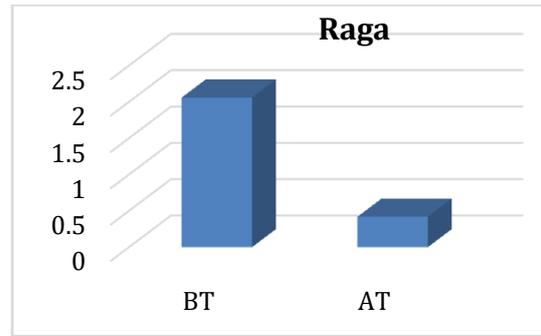


Figure No2: Effect of treatment on *Raga*

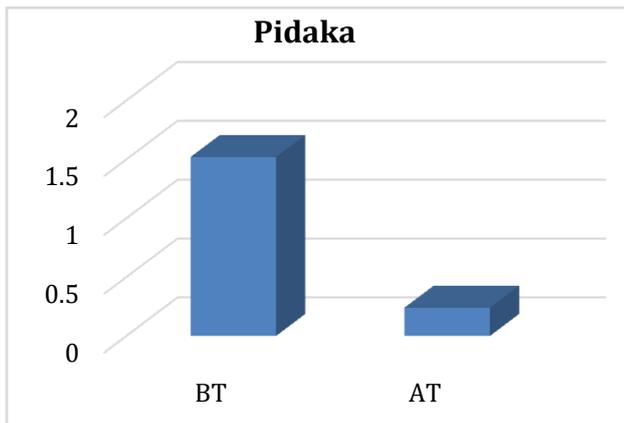


Figure No 3: Effect of treatment on *Pidaka*

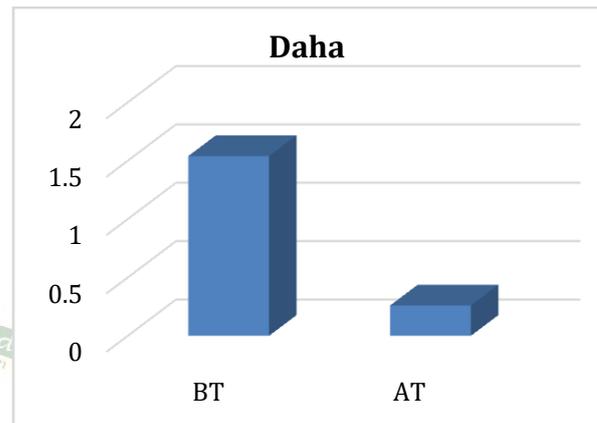


Figure No 4: Effect of treatment on *Daha*

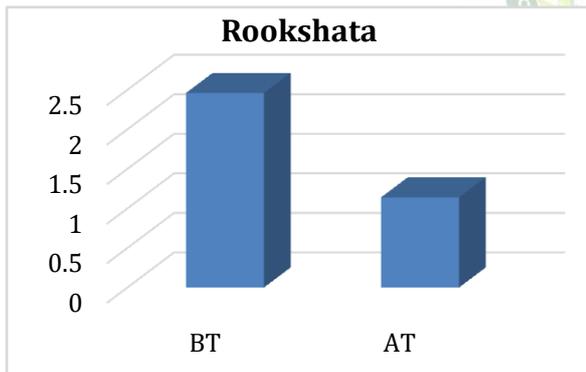


Figure No 5: Effect of treatment on *Rookshata*

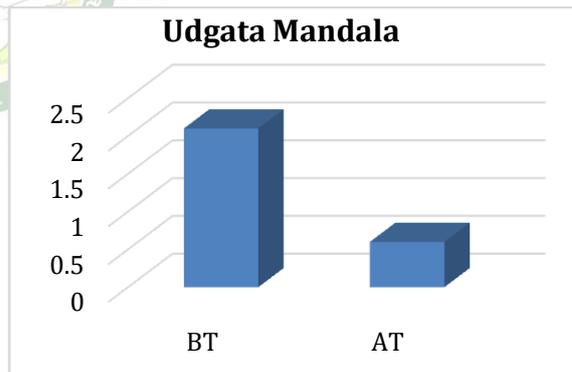


Figure No 6: Effect of treatment on *Udgata Mandala*

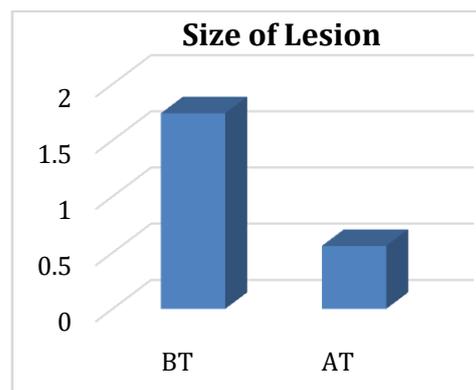
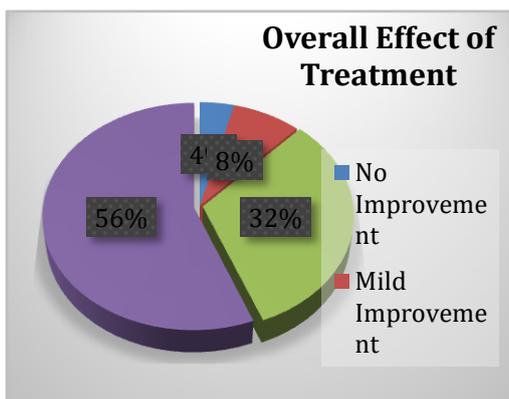


Figure No.8: Overall Effect of Treatment. Figure No 7: Effect of treatment on size of Lesion



Figure No.9: Lepa of *Dadrughna Choorna* Figure No10: *Pitta kustahara Kashaya* with *Nimbuka Swarasa*



Before Treatment

After Treatment