Published online in http://ijam.co.in ISSN No: 0976-5921

International Journal of Ayurvedic Medicine, Vol 14 (1), 2023; 76-83

Efficacy of *Sarjadi Lepa Gutika* and Terbinafine Ointment in *Dadru* (Tinea Corporis)

Research Article

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Abstract

The term *'Kushtha'* can be referred to various skin disorders. *'Dadru'* is a type of *Kushtha*. In *Dadru* there is *Pradhanata* of *Kapha-Pitta Dosha*. It exhibits clinical features of *Kandu, Raga, Pidika ,Utsanna Mandala.* On basis of clinical features *Dadru* is compared with Tinea by many scholars. Tinea is superficial fungal infection in which the fungi colonizes dead keratinized epidermal tissues of skin, hair and nails and produces annular lesions over skin surface. Aim- Efficacy of *Sarjadi Lepa Gutika* and Terbinafine Ointment along with *Tiladi Churna* internally in *Dadru* (Tinea Corporis). Material and Methods: Study contains 60 patients of *Dadru* which were divided equally into two groups (30 in each group). In Group A (Intervention) *Sarjadi Lepa Gutika* for local application twice daily and *Tiladi Churna* 6gm at morning after meal for 30 days was given. In Group B (Experimental group) Terbinafine Ointment for local application twice daily and *Tiladi Churna* 6gm at morning after meal 30 days was given. Assessment was recorded on every 15th day (15th day, 30th day and 45th day). Result – Both the groups were equally effective in reducing *Kandu*, *Raaga* and *Manadala utpatti*. Conclusion: *Sarjadi Lepa Gutika* is as effective as Terbinafine ointment in the management of *Dadru* (Tinea corporis) and it may prevent recurrence if combined with *Tiladi Churna* as *Abhyantar Chikitsa.*

Key Words: *Dadru, Sarjadi Lepa Gutika, Tiladi Churna,* Terbinafine Ointment.

Introduction

The largest organ in the human body is the skin. It is the body's highest protective organ that indicates a person's overall health. A person's personality is reflected in their skin. Skin is the target organ for many infectious diseases (1).

In Ayurveda, all skin ailments are categorized under the title of *'Kushtha'*. They are divided into two main groups: *Mahakushtha* and *Kshudrakushtha*. There are seven subtypes of *Mahakushtha* and eleven subtypes of *Kshudrakushtha*. According to Acharya Sushruta and Vagbhata, *Dadru* is the most prevalent skin condition that belongs in the *Mahakushtha* category, although Acharya Charaka classified it in the *Kshudrakushtha* category. *Rasa, Rakta, Mamsa*, and *Lasika* are involved in the *Samprapti*. *Nidana* of *Dadru* is explained under the *Kushtha roga*, i.e. *Aharaja, Viharaja, Upasargaja* and *Krimi* (2). According to *Dalhana* commentary on *Sushruta Samhita*, *Dadru* is categorized into two *Sita* and *Asita*. *Kandu* (itching), *Raaga* (erythema), *Pidaka* (eruptions) and *Utsanna Mandala* (elevated circular lesion) are clinical characteristics of *Dadru Kushtha* (3).

Dadru is regarded by modern science as a cutaneous fungal infection similar to Tinea.The symptoms of *Dadru* closely resemble the features of Tinea Corporis such as pruritis, erythema, vesicle or pustule, etc. Tinea is occurred by dermatophytes which are highly contagious (4).

In Ayurveda, *Shodhana, Shamana* and *Bahirparimarjana* (topical) *Chikitsa* are described for *Dadru.* Acharya *Charaka* and Acharya *Sushruta* in *Bahiparimarjana Chikitsa* described the use of various *Lepas* (Local application) in *Dadru Kushtha*. The disease mainly involves only *Rasavaha* and *Raktavaha Strotas* without further involvement of successive *Strotas*. In acute and mild conditions, external *Lepa Kalpana* can be beneficial in *Dadru* but in chronic and severe conditions *Shaman Chikitsa* along with *Lepa Kalpana* can be given. It also helps in fast recovery and also prevents recurrence.

In Chakradatta *'Sarjadi Lepa'* and *'Tiladi Churna'* are described in the management of *Dadru. Sarjadi Lepa* is used for *Bahirparimarjan* whereas *Tiladi Churna* is used internally. Terbinafine is a fungicidal medication that is active against dermatophytes both orally and topically. It belongs to the allylamine class of antifungals (5).

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Aim and Objectives

Aim

- Efficacy of *Sarjadi Lepa Gutika* and Terbinafine Ointment along with *Tiladi Churna* internally in *Dadru* (Tinea Corporis).

Objectives

- To assess the efficacy of *Sarjadi Lepa Gutika* with *Tiladi Churna* in *Kandu (*Itching*), Raaga (*Erythema*), Mandala (*circular patches*)*.
- To assess the efficacy of Terbinafine Ointment with *Tiladi Churna* in *Kandu (*Itching*), Raaga (*Erythema*), Mandala (*circular patches*)*.
- To compare the efficacy of *Sarjadi Lepa Gutika* with *Tiladi Churna* and Terbinafine Ointment with *Tiladi Churna* in *Kandu (*Itching*), Raaga (*Erythema*), Mandala (*circular patches*)*.
- To check recurrence after treatment.

Material and Methods

Clinical source

Patients from our institute's Kayachikitsa department OPD and IPD, as well as from peripheral camps, were enrolled in this study.

Method

Approval of Institutional ethics committee (Ref no MGACHRC/IEC/August-2020/94) on dated 13/08/2020.

The study was begun after the **CTRI** registration-Reg. no. CTRI/2020/11/029306.

Before commencement of the study, consent was taken from each subject and case proforma was also filled.

Photographs of patients before and after treatment were taken to compare the improvement.

Study design

Randomized Single-Blind (Assessor) Controlled Trial.

Sample size and grouping

60 patients equally divided into two groups (30 in each group).

Group A (Intervention)- *Sarjadi Lepa Gutika* for local application twice daily and *Tiladi Churna* 6gm at morning after meal for 30 days.

Group B- Terbinafine Ointment for local application twice daily and *Tiladi Churna* 6gm at morning after meal for 30 days.

Inclusion criteria

- Subjects willing to participate in the study and sign the consent form.
- Subjects of either sex in the age group of 20 - 50 years.
- Subjects with cardinal features of *Dadru* (Tinea corporis) like *Kandu (*Itching*), Raaga (*Erythema*), Mandala (*circular patches*)*.
- Subjects having a number of *Mandala* less than or equal to 9 and size of *Mandala* less than or equal to 9cm.

Exclusion Criteria

Women who are pregnant or nursing.

Dadru chronicity spanning more than 5 years.

Subjects suffering from Diabetes mellitus.

- Individuals having known allergy to Terbinafine.
- Cases of Tinea vesicolor, Tinea mannum, Tinea pedis, Tinea capitis, Tinea cruris.

Withdrawal Criteria

- Subjects are not willing to continue treatment.
- If aggravation of symptoms during treatment.
- Subjects were withdrawn from the study if any allergic reaction occurs and then he or she was treated free of cost for the same.

Selection of material

The raw drugs were identified and authenticated from Department of Dravyaguna, of our institute.

Sarjadi Lepa Gutika and *Tiladi Churna* were prepared in Dattatreya Rasashala of our institute as per standard protocol and were analyzed in Analytical Laboratory.

Composition of Material

Ingredients of *Sarjadi Lepa Gutika*

Table 1: Showing ingredients of *Sarjadi Lepa Gutika*

Sr.No.	Ingredient	Botanical Name	Part Used	Quantity
1	*Chakramarda*	*Cassia torra Linn*	Seed	1 Part
2	*Sarjarasa*	*Vateria indica Linn*	*Niryasa*	1 Part
3	*Haritaki*	*Terminalia chebula Roxb*	Fruit	1 Part
4	*Shashtikshali*	*Oryza sativa*	-	1 Part

Ingredients of *Tiladi Churna*

Table 2: Showing ingredients of *Tiladi Churna.*

Sr.No.	Ingredient	Botanical Name	Part Used	Quantity
1	*Tila*	*Sesamum indicum Linn*	Seed	1 Part
2	*Bakuchi*	*Psoralea corylifolia Linn*	Seed	2 Parts

Terbinafine ointment

Table 3: Showing composition of Terbinafine ointment

Brand name	Ingredient	Dose
Texifen	Terbinafine (1%	Q.S. for local

Preparation of Material

Preparation of *Sarjadi Lepa Gutika*

1. Raw forms of *Sarjaras, Haritaki, Chakramarda* and *Shashtikshali* were taken and dried it properly.
2. After that fine powder was prepared from it in a pulverizer.
3. *Kwath* was prepared by taking *Haritaki, Chakramarda* and *Shashtikshali Churna* by adding 16 parts of water and reducing it to half as per the Standard Operative Procedure mentioned in Sharandhara Samhita (6).
4. *Bhavana* of above prepared *Kwatha* was given to fine powders of *Sarjaras, Haritaki, Chakramarda and Shashtikshali* in *Khalva yantra* to form a bolus.
5. Then elongated *Lepa Gutika* was prepared from above-obtained material and dried in shade.

Preparation of *Tiladi Churna*

1. Raw seeds of *Tila* and *Bakuchi* were taken and dried properly.
2. Then fine powder was prepared from it in a pulverizer and *Churna* was obtained.

Posology: *Lepa*- Quantity Sufficient

Method of *Lepa* Application

Lepa from *Lepagutika* was made with plain water, and it was suggested to make new *Lepa* every time. It was suggested to uniformly apply *Lepa* at a thickness of half an *Angula* (0.48 cm) in the opposite direction of the hair roots and to remove it after it had dried. Applying in the morning and evening was suggested.

Tiladi Churna

6 gm at the morning after food with lukewarm water.

Study Duration:

- Duration of intervention- 30 Days
- Duration of follow-up- 45 Days.

Follow Up Period: On 15th Day, 30th Day and 45th Day.

Investigation: Random Blood Sugar

Assessment criteria-

a) Subjective parameters:

- *Kandu*(Itching)
- *Raaga*(Erythema)

b) Objectives parameters:

- Number of *Mandala* (Circular Patches)
- Size of *Mandala* (Circular Patches)

Gradation of Assessment criteria

***Kandu* (Itching):**

Table 4 – Showing gradations of *Kandu*

Grade	*Kandu* (Itching)
0	No *Kandu*
1	Episodic (no disturbance to routine work)
2	Frequent(disturbance to routine work)
3	Continuous(disturbance of sleep)

***Raaga*(Redness):**

Table 5 – Showing gradations of *Raaga*

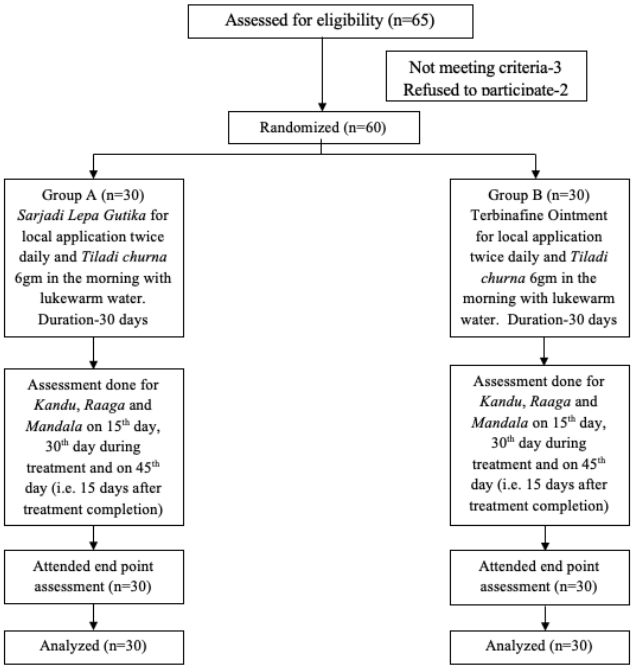
Grade	*Raaga*(Erythema)
0	Absent
1	Present

Number of *Mandala* and size of *Mandala* (circular patches):

Table 6- Showing gradations of number of *Mandala* and size of *Mandala*

Grade	Number of *Mandala*	Size of *Mandala*
0	No *Mandala*	Zero cm
1	1-3 *Mandala*	1-3 cm
2	4-6 *Mandala*	>3-6 cm
3	7-9*Mandala*	>6-9 cm

Flow chart 1- CONSORT Chart



Observation and Results

Table 7 – Showing distribution of patients according to mean of age

Baseline Characteristics	Group A (n=30)	Group B (n=30)	χ^2-value/ t-value	p-value
Age(yrs)	33.23±8.74	36.23±8.62	1.33	0.18,**NS**

In group A, the mean of age was 33.23±8.74 and in group B, the mean of age was 36.23±8.62. The comparison of both groups was not significant with X^2 (1.33) and p-value (0.18), thus both groups are comparable.

Table 8: Showing distribution of patients according to their gender

Baseline Characteristics	Group A (n=30)	Group B (n=30)	χ^2-value/ t-value	p-value
Male	18(60%)	17(56.67%)	0.06	0.79,**NS**
Female	12(40%)	13(43.33%)		

Out of patients diagnosed, group A had 18 (60%) male patients and 12 (40%) female patients, however, in group B, 17 (56.67 %) were male and 13 (43.33 %) were female out of total 30 patients. The comparison of both groups was not significant with X^2 (0.06) and p-value (0.79), thus both groups are comparable.

Table 9: Showing distribution of patients according to occupation

Baseline Characteristics	Group A (n=30)	Group B (n=30)	χ^2-value/ t-value	p-value
Private Job	17(56.67%)	16(53.33%)	1.71	0.63,**NS**
Farmer	2(6.67%)	5(16.67%)		
Housewife	5(16.67%)	5(16.67%)		
Student	6(20%)	4(13.33%)		

The distribution of patients according to occupation showed, that out of 30 patients in group A

17(56.67%) were doing a private job, 2(6.67%) were farmers, 5(16.67%) were housewives and 6(20%) were students whereas out of 30 patients in group B 16(53.33%) were doing a private job, 5(16.67%) were farmers, 5(16.67%) were housewives and 4(13.33%) were students. The comparison of both groups was not significant with X^2 (1.71) and p-value (0.63), thus both groups are comparable.

Table 10: Showing distribution of patients according to socio-economic class

Baseline Characteristics	Group A (n=30)	Group B (n=30)	χ^2-value/ t-value	p-value
Lower Class	6(20%)	8(26.67%)	0.37	0.54,**NS**
Middle Class	24(80%)	22(73.33%)		

In this study, out of 30 patients in group A, 6 (20%) were from the lower socio-economic class and 24 (80%) were from the middle socio-economic class, but out of 30 patients in group B, 8 (26.67%) were from the lower socio-economic class and 22 (73.33%) were from the middle socio-economic class. The comparison of both groups was not significant with X^2 (0.37) and p-value (0.54), thus both groups are comparable.

Table 11: Showing distribution of patients according to family history of contact

Baseline Characteristics	Group A (n=30)	Group B (n=30)	χ^2-value/ t-value	p-value
Yes	7(23.33%)	4(13.33%)	1.00	0.31,**NS**
No	23(76.67%)	26(86.67%)		

In this study out of 30 patients of group A, 7(23.33%) had a positive history of contact with family and 23(76.67%) had no history of contact with family whereas out of 30 patients of group B, 4(13.33%) had a positive history of contact in family and 26(86.67%) had no any history of contact in the family. The comparison of both groups was not significant with X^2 (1.00) and p-value (0.31), thus both groups are comparable.

Table 12: Showing distribution of patients according to *Ritu*

Baseline Characteristics	Group A (n=30)	Group B (n=30)	χ^2-value/ t-value	p-value
Grishma	11(36.67%)	12(40%)	0.11	0.94,**NS**
Varsha	11(36.67%)	11(36.67%)		
Vasant	8(26.67%)	7(23.33%)		

Classification of patients as per *Ritu* showed that out of 30 patients of group A, 11(36.67%) were affected in *Grishma Ritu*, 11(36.67%) were affected in *Varsha Ritu* and 8(26.67%) were affected in *Vasant Ritu* whereas out of 30 patients of group B, 12(40%) were affected in *Grishma Ritu*, 11(36.67%) were affected in *Varsha Ritu* and 7(23.33%) were affected in *Vasant Ritu*. The comparison of both groups was not significant with X^2 (0.11) and p-value (0.94), thus both groups are comparable.

Table 13: Showing comparison of *Kandu*/Itching at day 0, day 15, day 30 and day 45 in both groups

	Day 0	Day 15	Day 30	Day 45
Group A	2.23±0.56	1.36±0.49	0.16±0.37	0.13±0.34
Comparison of baseline(Day 0): Wilcoxon Signed Rank Test				
z-value	-	9.35 P=0.0001, **S**	19.40 P=0.0001, **S**	21 P=0.0001, **S**
Group B	2.36±0.49	1.26±0.44	0.03±0.18	0.03±0.18
Comparison of baseline(Day 0): Wilcoxon Signed Rank Test				
z-value	-	14.96 P=0.0001, **S**	26.65 P=0.0001, **S**	26.65 P=0.0001, **S**
Comparison between two group (Mann Whitney U Test)				
z-value	0.86	0.82	1.70	1.39
p-value	0.39,**NS**	0.40,**NS**	0.08,**NS**	0.16,**NS**

In group A, the mean score of *Kandu* at baseline was 2.23±0.56 which was reduced to 1.36±0.49 on the first follow-up. It was further reduced to 0.16±0.37on the second follow-up and was found to be 0.13±0.34 on the third follow-up.

Kandu showed statistically significant improvement on the first, second, and third follow-ups, with p-values of 0.0001, 0.0001, and 0.0001, respectively.

In group B, the mean score of *Kandu* at baseline was 2.36±0.49 which was reduced to 1.26±0.44 on the first follow-up. It was further reduced to 0.03±0.18 on the second follow-up and remained unchanged (0.03±0.18) on the third follow-up.

Kandu showed statistically significant improvement on the first, second, and third follow-ups, with p-values of 0.0001, 0.0001, and 0.0001, respectively.

The Mann-Whitney U Test was used to compare the two groups, and the results were statistically insignificant at baseline, first, second, and third follow-up, with p-values of 0.39, 0.40, 0.08, and 0.16, respectively.

Table 14 – Showing comparison of *Raaga* at day 0, day 15, day 30 and day 45 in both groups

	Day 0	Day 15	Day 30	Day 45
Group A	1±0	0.73±0.44	0.06±0.25	0.03±0.18
Comparison of baseline(Day 0): Wilcoxon Signed Rank Test				
z-value	-	3.25 P=0.003, **S**	20.14 P=0.0001, **S**	29 P=0.0001,**S**
Group B	1±0	0.80±0.40	0.03±0.18	0±0
Comparison of baseline(Day 0): Wilcoxon Signed Rank Test				
z-value	-	2.44 P=0.014,**S**	5.38 P=0.0001,**S**	5.47 P=0.0001,**S**
Comparison between two group(Mann Whitney U Test)				
z-value	0.00	0.60	0.58	1.00
p-value	1.00,**NS**	0.54,**NS**	0.55,**NS**	0.31,**NS**

In group A, the mean score of *Raaga* at baseline was 1±0 which was reduced to 0.73±0.44 on the first follow-up. It was further reduced to 0.06±0.25 on the

second follow-up and was found to be 0.03±0.18 on the third follow-up.

Raaga demonstrated a statistically significant improvement on the first, second, and third follow-ups, with p-values of 0.0003, 0.0001, and 0.0001, respectively.

In group B, the mean score of *Raaga* at baseline was 1±0 which was reduced to 0.80±0.40 on the first follow-up. It further reduced to 0.03±0.18 on the second follow-up and became 0±0 on the third follow-up.

Raaga demonstrated a statistically significant improvement on the first, second, and third follow-ups, with p-values of 0.014, 0.0001, and 0.0001, respectively.

The Mann-Whitney U Test was used to evaluate the two groups, and the results were statistically insignificant at the baseline, first, second, and third follow-ups, with p-values of 1.00, 0.54, 0.55, and 0.31, respectively.

Table 15: Showing comparison of number of *Mandala* at day 0, day 15, day 30 and day 45 in both groups

	Day 0	Day 15	Day 30	Day 45
Group A	1.86±0.57	1.40±0.49	0.80±0.48	0.80±0.48
Comparison of baseline(Day 0): Wilcoxon Signed Rank Test				
z-value	-	5.03 P=0.0001, **S**	9.13 P=0.0001, **S**	9.13 P=0.0001, **S**
Group B	2.06±0.69	1.40±0.49	0.70±0.46	0.70±0.46
Comparison of baseline(Day 0): Wilcoxon Signed Rank Test				
z-value	-	6.67 P=0.0001, **S**	9.25 P=0.0001, **S**	9.25 P=0.0001, **S**
Comparison between two group(Mann Whitney U Test)				
z-value	1.19	0.00	0.76	0.76
p-value	0.23,**NS**	1.00,**NS**	0.44,**NS**	0.44,**NS**

In group A, the mean score of the Number of *Mandala* at baseline was 1.86±0.57 which was reduced to 1.40±0.49 on the first follow-up. It was further reduced to 0.80±0.48 on the second follow-up and remains unchanged (0.80±0.48) on the third follow-up.

Statistically, the Number of *Mandala* improved significantly on the first, second, and third follow-ups, with p-values of 0.0001, 0.0001, and 0.0001, respectively.

In group B, the mean score of the Number of *Mandala* at baseline was 2.06±0.69 which was reduced to 1.40±0.49 on the first follow-up. It was further reduced to 0.70±0.46 on the second follow-up and remained unchanged (0.70±0.46) on the third follow-up.

Statistically, the Number of *Mandala* improved significantly on the first, second, and third follow-ups, with p-values of 0.0001, 0.0001, and 0.0001, respectively.

The Mann-Whitney U Test was used to compare the two groups, and the results were statistically insignificant at baseline, first, second, and third follow-up, with p-values of 0.23, 1.00, 0.44, and 0.44, respectively.

Table 16 – Showing comparison of size of *Mandala* at day 0, day 15, day 30 and day 45 in both groups

	Day 0	Day 15	Day 30	Day 45
Group A	2±0.69	1.46±0.62	0.80±0.48	0.80±0.48
Comparison of baseline(Day 0): Wilcoxon Signed Rank Test				
z-value	-	5.75 P=0.0001, **S**	9.20 P=0.0001, **S**	9.20 P=0.0001, **S**
Group B	2.10±0.71	1.50±0.57	0.76±0.43	0.76±0.43
Comparison of baseline(Day 0): Wilcoxon Signed Rank Test				
z-value	-	6.59 P=0.0001, **S**	9.63 P=0.0001, **S**	9.63 P=0.0001, **S**
Comparison between two group(Mann Whitney U Test)				
z-value	0.55	0.37	0.22	0.22
p-value	0.57,**NS**	0.70,**NS**	0.82,**NS**	0.82,**NS**

In group A, the mean score of the Size of *Mandala* at baseline was 2±0.69 which was reduced to 1.46±0.62 on the first follow-up. It was further reduced to 0.80±0.48 on the second follow-up and remains unchanged (0.80±0.48) on the third follow-up.

Statistically, the Size of *Mandala* improved significantly at the first, second, and third follow-ups, with p-values of 0.0001, 0.0001, and 0.0001, respectively.

In group B, the mean score of the Size of *Mandala* at baseline was 2.10±0.71which was reduced to 1.50±0.57 on the first follow-up. It was further reduced to 0.76±0.43 on the second follow-up and remains unchanged (0.76±0.43) on the third follow-up.

Statistically, the Size of *Mandala* improved significantly at the first, second, and third follow-ups, with p-values of 0.0001, 0.0001, and 0.0001, respectively.

The Mann-Whitney U Test was used to compare the two groups, and the results were statistically insignificant at baseline, first, second, and third follow-up, with p-values of 0.57, 0.70, 0.82, and 0.82, respectively.

Table 17– Showing overall improvement in group A and group B

Relief criteria	Group -A		Group - B	
	No. of patients in group A	Percentage of patients in group A	No. of patients in group B	Percentage of patients in group B
Excellent (>70%)	22	73.33	24	80
Moderate (30%-70%)	8	26.67	6	20
Poor (<30%)	0	0	0	0
Total	30	100	30	100

In group A, 22 patients (73.33%) showed excellent (>70%) relief and 8 patients (26.67%) showed moderate (30%-70%) relief.

In group B, 24 patients (80%) showed excellent (>70%) relief and 6 patients (20%) showed moderate (30%-70%) relief.

Disscussion

Dadru kustha is one of the most frequent skin illnesses that Acharya Sushruta and Vagbhata have classified as *Maha Kushtha.* The vast majority of other sources classify it as a *Kshudra Kushtha.* It is known as *Sankramaka Vyadhi (*Infectious*). Dhatus* get affected one after the other, resulting in severe pruritis that is difficult to treat. *Kandu, Raaga,* and *Utsanna Mandala* are distinctive of *Dadru,* which has a *Kapha* and *Pitta Dosha* predominance. In tropical and developing countries like India, the frequency of skin issues has risen dramatically in recent years.

In the current study, it was observed that out of 60 patients, 44 (73.33 %) were between the ages of 20 and 40 years old. Thus it is evident that the disease is prevalent in the young and middle age group. In this age group, people are exposed to mental stress, environmental and occupational toxins and unwholesome food habits which are the main etiologic factors of *Kushtha*. Hence, this may be the reason for the greater prevalence of *Dadru* at a young age.

The gender-wise distribution in this study revealed that the maximum of patients (58.33%) were male. This result shows that males are more prevalent to develop the disease than females. The probable reason may be because of scrotal anatomy and moistness in the area, nature of work and contact with environmental pollution found in most of the males. Also, most of the males work outdoors compared to females due to which there is an increase in sun exposure that causes increased perspiration.

Considering the distribution of patients as per occupation majority of the patients (55%) were working in a private company. The probable cause of prevalence in people working in a private company could be contributed to a sedentary lifestyle and long hours of sitting work which can lead to sweating and moisture, especially around the groin and buttocks.

In the present study out of 60 patients, maximum of patients (76.36%) belonged to the middle socio-economic class. It might be due to the greater percentage of middle socio-economic class people in the area where the study was conducted. Moreover, these people lead a busy lifestyle which may lead to ignorance of personal hygiene which may precipitate the disease.

Out of the 60 patients enrolled in the study maximum patients (81.66%) reported no history of contact with family members. *Dadru* is a contagious disease but the findings of the present study don't support the statement.

The distribution of patients according to *Ritu* showed that maximum cases were found in *Grishma Ritu* (38.33%), and *Varsha Ritu* (36.33). This can be attributed to the humid and hot climate in *Grishma Ritu* which causes excessive sweating whereas there is increased moistness in *Varsha Ritu* that is known to be favorable for the growth of dermatophytes.

Probable mode of action of *Sarjadi Lepa Gutika-*

Sarjadi Lepa is indicated in the management of *Dadru Kushtha* by Acharya Chakradatta. *Katu Rasa, Ushna Veerya, Katu Vipaka,* and *Laghu, Ruksha Guna* are attributes of *Chakramarda.* It acts as *Kapha-Vatahara, Kushthaghna, Kandughna*, and *Krimighna*. Thus, it helps to reduce *Kandu* due to its *Kaphaghna* and *Kandughna* property which is the most common feature of *Dadru*. In *Dadru*, the growth of *Krimi* is an important etiological factor. The *Krimighna Prabhava* of *Chakramarda* may help to eliminate *Krimi* which forms the basis of pathogenesis of *Dadru Kustha* and hence relieve the symptoms. Other studies conducted by Sourabh et. al., Anoma et. al., Melashankar et. al. have used *Chakramarda* for external application as one of the ingredients and found similar results (7,8,9). According to modern medicine, it is considered a fungal infection of the skin caused due to dermatophytes and *Chakramarda* possesses antifungal activity and hence may reduce infection when applied locally. Samarwickrama et al. determined from a microbiological study that the alcoholic extract of *Chakramarda* demonstrated a progressive rise in the zone of inhibition with increasing concentration. The antifungal action of *Chakramarda* increases as the concentration of the drug rises. Dermatophytoses are treated with an alcoholic extract of *Chakramarda* seeds, which has antifungal (*Krimighna*) properties (Tinea). As a result, *Chakramarda* works well against *Dadru Kushta* (10).

Madhura, Amla, Katu, Kashaya, Tikta Rasa, Ushna Veerya, Madhura Vipaka, and *Laghu, Ruksha Guna* are all present in *Haritaki.* Its qualities include *Tridoshaghna, Kushthghna, Krimighna,* and *Vranaropaka.* The *Tridoshaghna* property helps in alleviating the *Tridosha* which are the main causative factor for the formation of *Kustha*. The *Kushthaghna* and *Krimighna* properties help to kill the *Krimi* present on the skin surface while the *Vranaropak* property may help to reduce *Raaga* (erythema) which is one of the characteristic features of *Dadru*. An aqueous extract of *T. chebula* has been shown to have antifungal action against numerous (11).

Shashtikshali has *Madhura Rasa* and *Sheeta, Laghu Guna*. It has been described as having *Vata-Pitta Shamak* and *Pathya* properties. Thus with the help of *Madhura Rasa* and *Sheeta Guna* it may pacify *Pitta Dosha* and may contribute to the reduction of *Raaga* which is one of the features of *Dadru*.

Sarjaras has *Tikta, Kashaya Rasa, Sheeta Veerya* and *Katu Vipaka*. It acts as *Vata-Pittahara, Krumighna* and *Varnya*. It may help to pacify *Pitta Dosha* and associated complaints like *Raaga* by virtue of its *Varnya* property. The *Krumighna* action can facilitate in reduction of dermatophytes and help in relieving symptoms. A study conducted on the pharmacological action of *Vateria indica* revealed that it has an anti-inflammatory activity which may be due to the presence of alkaloids, steroids and glycosides (12).

Bhrajaka Pitta, Saman and *Vyan Vayu*, and *Shlesaka Kapha* collaborate on the absorption and metabolism of *Lepa* (drug). With the help of *Saman* and

Vyan Vayu, *Bhrajaka Pitta* metabolizes the active ingredients of medications applied to the skin. (13). *Lepa* is generally applied against the direction (*Pratiloma*) of hair follicles this facilitates the rapid absorption of the drug through *Romakupa* (hair roots), *Sweda Vahini* (sweat glands) and *Siramukha* (blood capillaries). *Teekshna guna* of *Lepa* helps in removing the obstruction of *Swedovaha Strotas* and removes toxins (14).

It can be correlated as Transdermal Drug Delivery System in modern science (TDDS). TDD involves applying a drug formulation to healthy, intact skin as a painless method of systemically delivering medication. Without building up in the dermal layer, the medication initially penetrates the stratum corneum before moving on to the deeper epidermis and dermis. When the drug enters the dermal layer through the dermal microcirculation, it becomes accessible for systemic absorption (15).

Probable mode of action of *Tiladi Churna*

Tikta, Katu Rasa, Ushna Veerya, Katu Vipaka, Laghu, Ruksha Guna, and *Kushthaghna Prabhava* are all present in *Bakuchi*.. It has *Kapha Shamak, Kusthghna, Krimighna, Twachya* and *Kandughna* properties. In *Dadru Kustha* there is vitiation of *Pitta-Kapha Dosha* along with *Rasa, Rakta, Mansa* and *Lasika*. Also, there is the involvement of *Krimi* in the pathogenesis. When *Bakuchi* is administered internally by virtue of its *Kapha Shamak, Kusthghna, Krimighna, Twachya* and *Kandughna* properties it may help the destruction of *Krimi* and hence breaking the pathogenesis of the disease. Acharya Vagbhata has stated *Rasayana* property of *Bakuchi* which may be able to prevent the recurrence of the disease by providing strength to the *Dhatus*. A research concluded that bakuchiol, at concentrations up to 250 g/ml, a phenolic substance isolated from *P. corylifolia* (seeds) exhibited antifungal action against a number of pathogenic fungus known to cause tinea (16).

Tila possesses *Madhura, Tikta, Kashay Rasa, Ushna Veerya, Madhura Vipaka* and *Sukshma Guna.* It acts as *Keshya, Twachya* and *Vranaropaka.* Due to the presence of *Tikta Kashaya Rasa, Ushna Veerya* and *Madhura Vipaka* it may alleviate *Pitta* and *Kapha Dosha* responsible for the pathogenesis of *Dadru*. In *Kushtha* there is *Dhatugat Awastha*. The *Krimi* enter the *Rasa, Rakta, Mansa* and *Lasika* to form *Dadru*. The *Sukshma Guna* of *Tila* may be useful in deeper penetration of the drug in the *Dhatus*. When used along with *Kushthaghna* and *Krimighna* drugs like *Bakuchi* it may facilitate its activities and may provide better results. Along with this it also has mild purgative action which may help in *Shodhana* of the *Doshas* which is considered a prime treatment modality for *Kustha*.

Mode of action of Terbinafine

Terbinafine has fungicidal properties. It inhibits 'squalene epoxidase,' an early enzyme in fungi's ergosterol production, in a non-competitive manner. The fungicidal activity appears to be due to the accumulation of squalene within fungal cells. It is broadly dispersed in tissues, has a high affinity for keratin, and is strongly plasma protein-bound. As a result, it's concentrated in sebum, the skin's stratum corneum, and nail plates. It may cause side effects like erythema, itching, dryness, irritation, urticaria and rashes (17).

Limitations And Recommendations

Limitations

- The sample size was small due to the limited duration of the study.
- *Potassium Hydroxide (KOH)* test to confirm fungal infection was not done.
- *Patients having a number of Mandala >9 and a size of Mandala >9cm (i.e. extensive disease) were excluded.*

Recommendation

- The duration of follow-up after treatment can be extended up to 1 month.
- An ointment can be prepared for easy application.
- A study can be conducted to evaluate the efficacy of *Sarjadi Lepa Gutika* and *Tiladi Churna* in other fungal disorder.

Conclusion

From this study, it can be concluded that-

- Due to similarities in symptoms such as *Kandu (*itching*), Raaga (*erythema*), and Mandala (*circular patches*), Dadru Kushtha* can be linked to Tinea corporis, a fungal infection.
- The comparison of improvement in every subjective and objective criteria was statistically insignificant, indicating that both groups are equally successful in lowering all symptoms.
- So it can be concluded that *Sarjadi Lepa Gutika* is as effective as Terbinafine ointment in the management of *Dadru* (Tinea corporis) and it may prevent recurrence if combined with *Tiladi Churna* as *Abhyantar Chikitsa.*
- No adverse effects of *Sarjadi Lepa Gutika* and *Tiladi Churna* were observed in the study.

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