Research Article

A PHYSIOLOGICAL STUDY OF *TWACA* W.S.R. TO EFFECTIVENESS OF *MADHUCHCHISTA* AND *JATYADI TAILA* IN *PADADARI*

Rahish Sewda[1]*, Kishori Lal Sharma[2], Ayushi Nigam[3]

*[1]PG Scholar, [2]Associate Professor, [3]Assistant Professor of Kriya Sharir Vibhag, M.M.M. Govt. Ayurved College, Udaipur, Rajasthan, India.

ABSTRACT

Ayurveda considers *Padadari* under *Kshudra roga* which has been first described in Sushruth Samhita. *Padadari* is one of the most commonest and negligible diseases, highly prevalent in rural areas. *Vruddha Vata Dosha* is related to *Padadari*. It is characterised by minor to severe cracks on the feet, more frequently on the heels. In severe conditions, it causes *Vedana, Daha, Rookshata* and occasionally *Raktasrava*. Here, *Madhuchchista* and *Jatyadi Taila* being cost and medically more effective are used as remedy for *Padadari*. An open labelled clinical trial has been conducted to evaluate the effectiveness of *Malahar* prepared using *Madhuchchista* and *Jatyadi Taila* in *Padadari*. **Material and Method**: Whole pharmaceutical procedure was carried out in the sequence of *Madhuchchista* and *Jatyadi Taila* preparation. Ratio of 1:5 of *Madhuchchista* and *Jatyadi Taila* for preparing *Sikta Taila* was selected and prepared for the preparation of *Padadari Malahar*. **Result**: Response to the treatment was recorded on a weekly basis and therapeutic effect was evaluated through symptomatic relief. **Conclusion**: The study yielded statistically highly significant results in symptoms such as dryness (P<0.001), roughness (P<0.001) and cracks associated with pain (P<0.001).

INTRODUCTION

The foundational disciplines of Ayurveda are intended to lessen suffering in people. This science discusses what normal and unhealthy human health statuses are. The integumentary system includes the skin, which is both the body's largest external organ and its most attractive organ. A recent WHO report on skin illnesses in India states that skin conditions are among the most prevalent non-communicable diseases in that country. A person's overall health status affects their skin's state. The daily practise of *Abhyanga*, an oil massage, is recommended for the skin. *Netra* (the eyes), *Shiras* (the head), *Karna* (the ear), and *Pada* (the foot) receive specific attention during this massage. Regular *Padabhyanga* use promotes *Drushtiprasada*[1] (excellent for the eyes) and maintains the health of the feet, thus demonstrating the significance of *Pada*.

Due to their hectic schedules, people find it difficult to dedicate time to foot protection. This negligence results in the heel breaking and may cause frequent skin conditions like *Padadari* (cracked foot), one of the most prevalent and minor illnesses. It occurs due to *Vata* elevating certain activity like excessive walking poor hygiene, barefoot, improper foot wear or some environmental factors like summer, rainy, winter, autumn season. Some health condition like obesity etc. are main causative factor of cracked heels.

Padadari, which is a *Kshudra Rog*[2] has been first described in *Sushruta Samhita*.

परिक्रमणशीलस्य वायुरत्यर्थरुक्षयो ।

पादयोः कुरुते दारी सरुजा तलसंश्रिताम्[3]

Ayurveda has mentioned two types of treatment in *Padadari*, *Antahparimarjan* and *Bahirparimarjan*[4] which means respectively systemic and local therapy. In *Padadari*, local treatment is more effective than systemic in short duration.

Here in this study, we are using increased amount of *Madhuchchhista* along with *Jatyadi Taila* because of its *Snigdha* property which will alleviate the *Ruksha Guna* and will relieve the symptoms. Various

lotions and creams are being tried but not much beneficial and are quite expensive, while *Madhuchchhista* and *Jatyadi Taila* are cost effective and medically more effective.

AIMS AND OBJECTIVE

The aim is to evaluate the effectiveness of *Madhuchchhista* and *Jatyadi Taila* in treating *Padadari* (cracked feet) through single blind clinical study.

MATERIALS AND METHODS

Preparation of *Malahar*

Padadari Malahar is a classical formulation mentioned in *Rasatarangini*. The main ingredients are *Madhuchchhista* and *Jatyadi Taila*. This formulation is

Wax Purification

mentioned in eleventh *Taranga* of *Rasatarangini*. Detailed study of each content is essential to understand pharmaceutical action of *Malahar*. Whole pharmaceutical procedure was carried out in the sequence of *Madhuchchhista Shodhana* and *Jatyadi Taila* preparation.

Practical No. 1. *Madhuchchhista*

Reference: Rasatarangini

Date of commencement: 22/11/2022

Date of completion: 28/11/2022

Apparatus: Iron pot, cloth, gas cylinder with *Chullah.*

Material used: *Ashuddha Madhuchchhista* 4500gm. Water: 2 lit. approx.

| Impure wax | Pure Wax |

Practical No. 2. *Jatyadi Taila*[5]

Issued *Jatyadi Taila* from pharmacy of *Rasashastra*, M.M.M. Government Ayurved college, Udaipur.

Material used: *Jatyadi Taila*: 7.2 Litre

Madhuchchhista: *Jatyadi Taila*[6]

1 : 5

Preparation of *Malahar*

Packing of *Malahar*

Labelling process

Complete Package

Patient Selection

Clinically diagnosed 30 patients of *Padadari* visiting an outpatient department of Moti Chohhta Govt. Ayurved Hospital, Udaipur (Raj.), after obtaining the informed consent were registered. The trial was approved by the Institutional Ethics Committee (No.IEC/ACA/2021/ 5126-5274 dated: 31-12-2021) and was registered in the Clinical Trial Registry of India (CTRI) (Reg. no. CTRI/2022/06/043596) (Registered on: 30-06-2022)

Criteria of Inclusion

1. Patients between age group 18-50 years of either sex.

2. Patients having symptoms of *Padadari*.

Criteria of Exclusion

1. Patient below 18 years and above 50 years of age.
2. Patients having diabetes and other associated diseases.

Criteria of Assessment

The criteria of assessment were kept based on relief in the signs and symptoms of the disease *Padadari*. For this purpose, signs and symptoms were given scores according to their severity before and after treatment.

Scoring Pattern
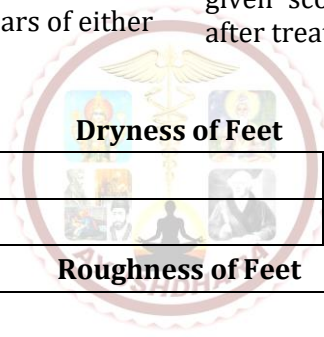
Dryness of Feet

No dryness	0
Dryness present	1

Roughness of Feet

No roughness	0
Mild roughness	1
Moderate roughness	2
Coarse roughness that can prominently seen	3

Cracks of Feet

No cracks	0
Mild cracks (1 – 2)	1
Moderate cracks (2 – 8)	2
Severe (>8)	3

Depth of Cracks

|	
No cracks	0
Mild (superficially some cracks visible)	1
Moderate (cracks with superficial fissure)	2
Severe (cracks with deep fissure)	3

Pain Tendency

No pain	0
Mild pain in cracked areas	1
Moderate pain	2
Severe pain	3

Analytical Study

| S.No.	Test Parameters	Results
A.	**Physiochemical Analysis**	
1.	pH (10%w/v Aq. Sol.)	6.50
2.	Weight per ml	0.9266
3.	Total fatty matter	80.55
4.	Acid value	1.23
5.	Rancidity	Absent
6.	Saponification value	45.72
7.	Peroxide value	23.48
8.	Spreadibility	15.0
9.	High Performance Thin Layer Chromatography	Data attached

Track 1, ID: Padadari Malahar
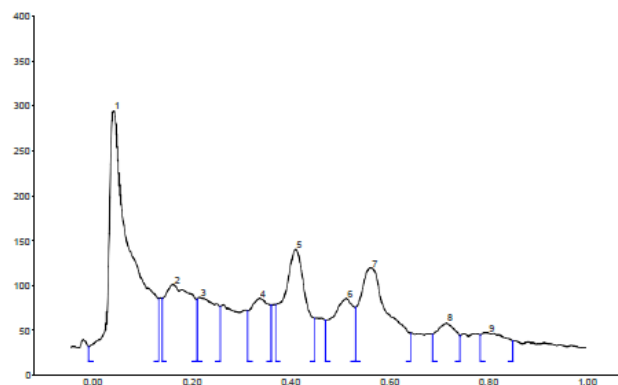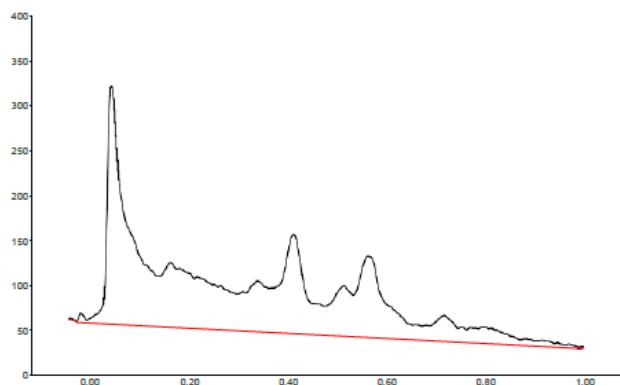
Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1.	-0.01	1.6	0.04	264.3	35.48	0.13	55.1	8552.8	33.55	Unknown
2.	0.14	55.2	0.16	70.7	9.48	0.21	54.0	3001.5	11.77	Unknown
3.	0.21	54.7	0.22	56.5	7.58	0.26	46.4	1657.2	6.50	Unknown
4.	0.31	41.4	0.34	55.2	7.41	0.36	47.7	1635.8	6.42	Unknown
5.	0.37	48.2	0.41	109.5	14.70	0.45	33.2	3662.8	14.37	Unknown
6.	0.47	31.2	0.51	54.9	7.37	0.53	45.0	1789.1	7.02	Unknown
7.	0.53	45.3	0.57	89.2	11.97	0.64	16.5	3757.1	14.74	Unknown
8.	0.69	15.3	0.72	27.7	3.72	0.74	13.7	816.7	3.20	Unknown
9.	0.79	14.6	0.80	17.0	2.28	0.85	8.3	622.8	2.44	Unknown

Track 2, ID: Padadari Malahar
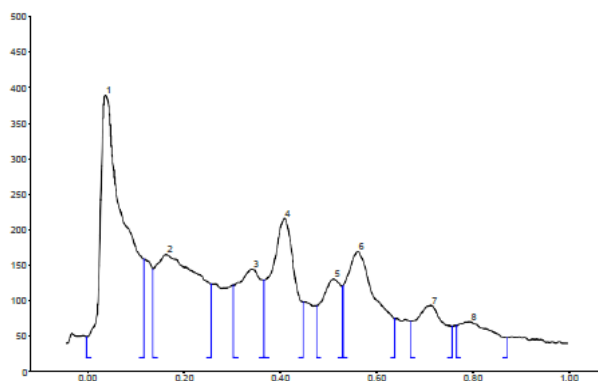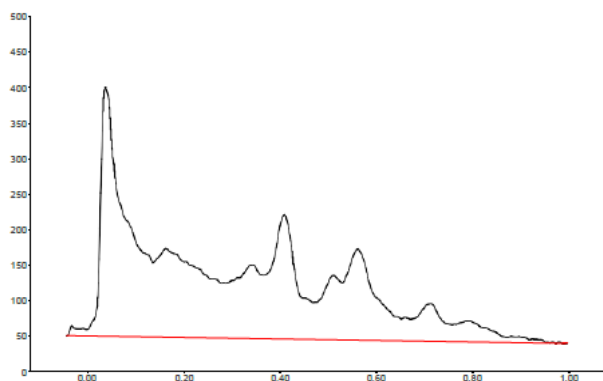
Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1.	-0.00	9.5	0.04	349.3	33.04	0.12	118.2	13170.6	29.35	Unknown
2.	0.14	104.7	0.16	124.9	11.81	0.26	83.1	8752.6	19.51	Unknown
3.	0.30	81.9	0.34	104.1	9.85	0.37	89.5	4008.8	8.93	Unknown
4.	0.37	89.6	0.41	175.3	16.58	0.45	58.3	6437.5	14.35	Unknown
5.	0.48	53.0	0.51	90.8	8.59	0.53	80.6	2810.9	6.26	Unknown
6.	0.53	81.3	0.56	128.7	12.18	0.64	34.9	5922.9	13.20	Unknown
7.	0.67	31.4	0.72	53.4	5.05	0.76	24.1	2248.6	5.01	Unknown
8.	0.77	24.9	0.80	30.6	2.89	0.87	8.0	1519.9	3.39	Unknown

Track 3, ID: Padadari Malahar
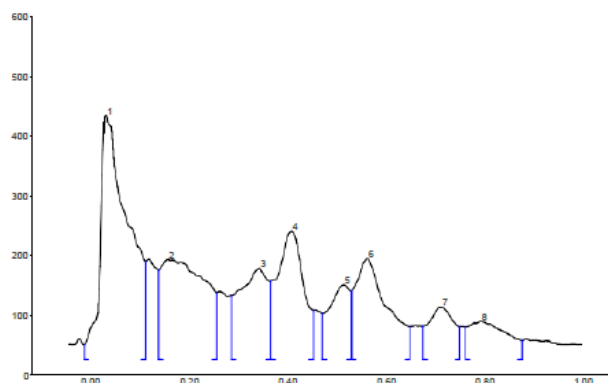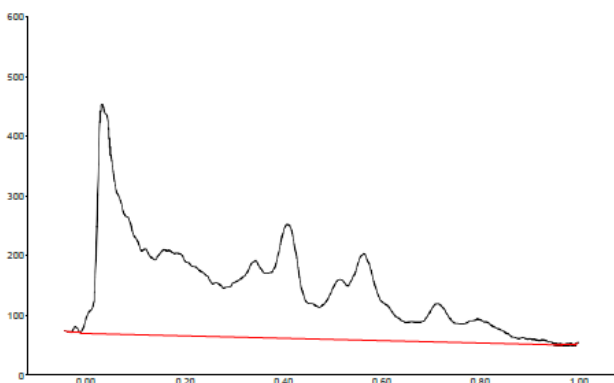
Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1.	-0.00	0.1	0.03	383.6	32.36	0.11	139.1	15873.3	29.97	Unknown
2.	0.14	124.7	0.16	141.8	11.96	0.26	86.7	9797.9	18.50	Unknown
3.	0.29	81.8	0.34	127.4	10.75	0.37	106.3	5649.7	10.67	Unknown
4.	0.37	106.7	0.41	188.9	15.93	0.46	57.5	7528.7	14.21	Unknown
5.	0.47	52.1	0.52	99.4	8.39	0.53	89.3	3165.3	5.98	Unknown
6.	0.53	89.5	0.56	143.4	12.10	0.65	29.9	6594.8	12.45	Unknown
7.	0.68	31.0	0.71	62.5	5.27	0.75	30.2	2328.9	4.40	Unknown
8.	0.76	29.4	0.80	38.5	3.24	0.88	7.2	2033.1	3.84	Unknown

Management
Single Group: 30 patients
Duration: 2 months
Dose: 2 – 3gm/day for external use.
RESULT

Before	**After**

Total registered patients 34, out of which 30 patients were completed and 4 patients were lama. There most of patient were between age group of 31-50 were 63.33% the age group of 17-30 were 36.66%.

Table 1: Dryness

Dryness	Mean	SD	S.E.M
0 Day	2.60	0.50	0.09
7 Day	2.60	0.50	0.09
15 Day	1.70	0.47	0.09
30 Day	0.70	0.47	0.09
60 Day	0.20	0.41	0.07

Dryness	Mean Diff.	P value
0-7 Day	0.00	NA
0-15 Day	0.90	<0.001
0-30 Day	1.90	<0.001
0-60 Day	2.40	<0.001

Table 2: Roughness

Roughness	Mean	SD	S.E.M
0 Day	2.60	0.50	0.09
7 Day	2.50	0.51	0.09
15 Day	1.70	0.47	0.09
30 Day	0.70	0.47	0.09
60 Day	0.20	0.41	0.09

Roughness	Mean Diff.	P value
0-7 Day	0.10	0.04
0-15 Day	0.90	<0.001
0-30 Day	1.90	<0.001
0-60 Day	2.40	<0.001

Table 3: Cracks of Feet

Cracks of Feet	Mean	SD	S.E.M
0 Day	1.63	0.61	0.11
7 Day	1.63	0.61	0.11
15 Day	1.40	0.50	0.09
30 Day	0.60	0.62	0.11
60 Day	0.27	0.45	0.08

Cracks of Feet	Mean Diff.	P value
0-7 Day	0.00	NA
0-15 Day	0.23	<0.001
0-30 Day	1.03	<0.001
0-60 Day	1.37	<0.001

Table 4: Depth of Cracks

Depth of Cracks	Mean	SD	S.E.M
0 Day	1..43	0.73	0.13
7 Day	1.43	0.73	0.13
15 Day	1.33	0.71	0.13
30 Day	0.50	0.63	0.11
60 Day	0.43	0.50	0.09

Depth of Cracks	Mean Diff.	P value
0-7 Day	0.00	NA
0-15 Day	0.10	0.04
0-30 Day	0.93	<0.001
0-60 Day	1.00	<0.001

Table 5: Pain Tendency

Pain Tendency	Mean	SD	S.E.M
0 Day	1.00	0.98	0.18
7 Day	1.00	0.98	0.18
15 Day	0.47	0.63	0.11
30 Day	0.30	0.47	0.09
60 Day	0.07	0.25	0.05

Pain Tendency	Mean Diff.	P value
0-7 Day	0.00	NA
0-15 Day	0.10	0.04
0-30 Day	0.93	<0.001
0-60 Day	1.00	<0.001

Effect of *Padadari Malahar* in subjective parameters

Symptom	Mean Score			% Relief	S.D.	S.E.	P Value
	BT	AT	BT-AT				
Dryness	2.60	0.20	2.40	92.30	0.41	0.07	<0.001
Roughness	2.60	0.20	2.40	92.30	0.41	0.009	<0.001
Cracks of Feet	1.63	0.27	1.36	83.44	0.45	0.08	<0.001
Depth of cracks	1.43	0.43	1.00	69.93	0.43	0.50	<0.001
Pain tendency	1.00	0.07	0.93	93	0.25	0.05	<0.001

Effect of Padadari Malahar in subjective parameters
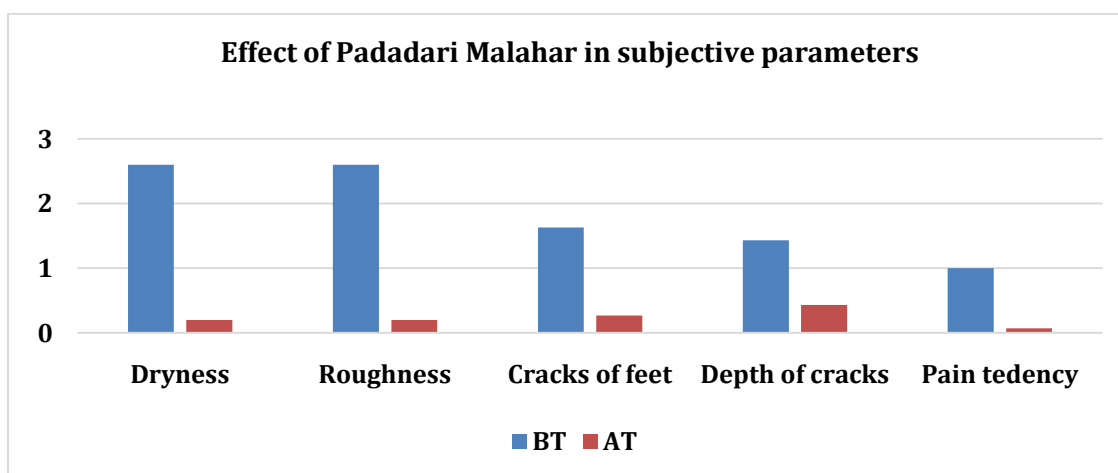
- The mean symptom score for dryness was 2.60, which was reduced to 0.20 after the treatment. Thus, dryness was reduced to 92.30%, which was highly significant (P<0.001).

- For the symptoms of roughness, the mean score before treatment was 2.60, which was reduced to 0.20 after the treatment. This rate was 92.30%, which was highly significant (P<0.001).

- For the symptoms of cracks of feet, the mean score before treatment was 1.63, which was reduced to 0.27 after the treatment. This rate was 83.44%, which was significant (P<0.001).

- For the symptoms of depth of cracks, the mean score before treatment was 1.43, which was reduced to 0.43 after the treatment. This rate was 69.93%, which was significant (P<0.001).

- For the symptoms of pain tendency, the mean score before treatment was 1.00, which was reduced to 0.07 after the treatment. Thus, brittleness was reduced by only 93%, but statistically significant (P<0.001).

Incidence of Age - There was a total of 11 patients in the age group of 17-30 years with % criteria of 36.66 and 19 patients in the age group of 31-50 years with % criteria of 63.33. It is seen that from the third decade onwards the *Padadari* is increased.

Incidence of Gender – Out of all the patients, 80% were females and rest 20% were male. So, female is found to be more suffering from *Padadari* in practice.

Incidence of Religion - Patients from all the religion were being included in the study out of which 93.33% were found to be of Hindu religion and rest 6.66% were Muslim. Majority of the patient was from Hindu religion because most of the patient came from rural areas and were farmers.

Incidence of BMI - Majority of the patients i.e., 63.33% were having normal BMI, 23.33% patients were overweight and 0.33% patients were under weighed. Hence, it is found that maximum patients in this study have normal BMI.

Incidence of Emotional Status - In this study, there were 53.33% patient who has normal emotional status while 46.66% was suffering from anxiety. Hence, maximum patients have normal emotional status.

Incidence of Habitat - Out of all the patients, 50% patient belong to rural areas and remaining 50% belong to the urban areas. Therefore, patients from rural and urban areas are similar.

Incidence of Diet- In all these 30 patients, there were 73.33% patient who were vegetarian and rest 26.66% patient were of mix type i.e., vegetarian, and non-vegetarian.

Demographic study
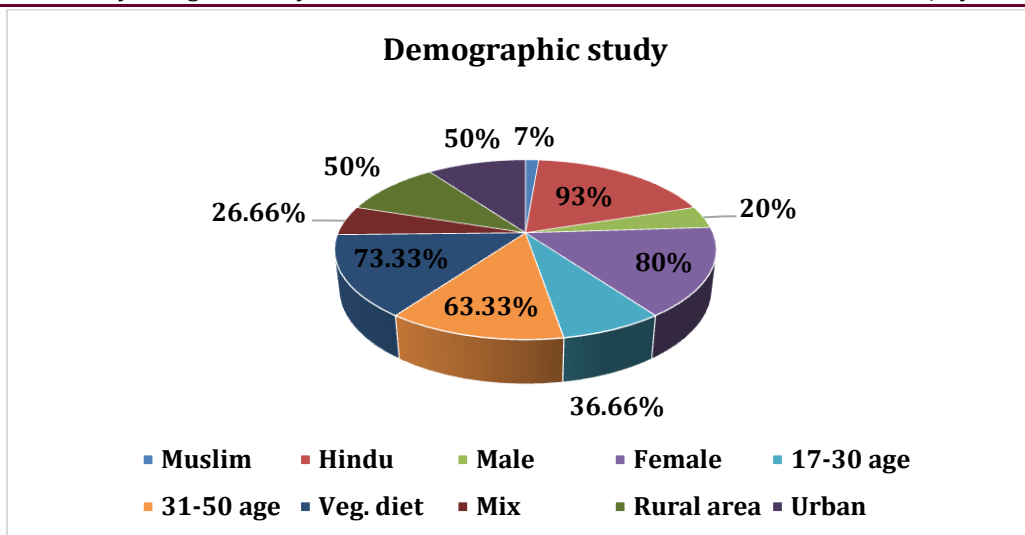
Total percentage of symptom relief

• Dryness – 92.30%

• Roughness – 92.30%

DISCUSSION

As per Ayurvedic principles, *Vata* and *Kapha* are the two basic energies that uphold the balance of our body equilibrium. According to Ayurveda, dry skin is caused by *Vata Dosha*. When *Vata Dosha* increases in body it reduces *Kapha* and makes skin dry and wrinkled. *Kapha* keeps skin soft and smooth whereas *Vata* makes the skin dry and rough. Thus, the aggravated *Vata* gives rise to peculiar painful cracks (*Dari* in the affected parts) which are called *Padadari.* So, the line of treatment is controlling *Vata*, overwhelming dryness and healing the cracks, which is possible by cleaning, drying, and applying *Sneha Dravya* (lubricants) to the affected area.

In *Sushruta Samhita* the line of treatment for *Padadari* is-

"पाददार्यां सिरां विद्धा स्वेदाभ्यङ्गौ प्रयोजयेत् ।

मधूच्छिष्ठ वसा मज्जसर्ज चूर्णघृतैः कृतः ।

यवाहगैरिकोन्मिदौ पादलेपः प्रशस्यते ॥[7]

In the preparation of *Malahar*, the base is usually bee wax (*Madhuchchhista*) along with *Jatyadi Taila* as *Sneha Dravya.* The main aim of *Madhuchchhista*[8] is to stop discharge, promote healing of wounds and tissue regeneration (*Vranaropana*), and reduces pain so is used in simple to fissured bleeding cracks. *Madhuchchhista* have *Vataghanta* property which are beneficial for *Padadari*. *Jatyadi Taila* being Ayurvedic oil has an anti-bacterial property which makes it an excellent wound healer. Most *Jatyadi Taila's* constituents contain *Tikta*, *Kashaya*, *Rasas* and *Laghu*, *Ruksha Gunas. Jatyadi Taila* is *Tikta* and *Kashaya Rasa Pradhana*, both of which are *Pitta Kaphahara* and have the properties of *Vrana Shodhana*, *Ropana*, *Pootihara* and *Vedana Sthapana*. The *Gunas* and *Karmas* of these two together enhance

• Cracks of feet – 83.44%

• Depth of cracks – 69.93%

• Pain tendency – 93%

potency of the action and helps in *Samprapti Vighatana* and thus reducing *Lakshanas* of *Padadari.*

CONCLUSION

The study has been carried out to establish an effective compound drug remedy. *Padadari* is highly common in housewives and farmers due to improper foot care, unsanitary circumstances, hard shoes, and other environmental factors. Various lotions, creams, oils are being tried, expecting some benefits, but many of them do not work up to the mark and are very expensive. *Padadari Malahar* was advised 2 months. Follow- ups were taken after 7 days, 15 days, 30 days, 60 days and observation and statistics were made by scoring the symptoms like dryness, roughness, cracks of feet, depth of cracks, pain tendency were done. Out of the maximum percentage of patients distributed according to their sex, religion, age, area, diet etc are summarized here. Females made up 80% of the population, men made up 20%. The trial drugs are reasonably priced, and preliminary phytochemical and physical constant analyses confirmed their authenticity, good quality, and purity. Both were discovered to be carbohydrate-rich and highly efficient in *Padadari*. The observations showed that the 30-50 years age are the main victim of the diseases. *Padadari Malahar* was equally effective in curing the *Padadari* in each group, supporting the *Nighantukara*-mentioned qualities of *Vrana Shodhana*, *Ropana*, *Twak Sandhanakara*, and *Vatahara*. No adverse reactions were observed during the treatment. Most patients had *Vata* and *Pitta Pradhan Prakriti*. In groups of patients, the effect of the drug was found to be highly significant in *Padadari*. In the group, dryness, roughness, cracks of feet, depth of cracks, pain tendency, were highly significant (P<0.001).

REFERENCES

1. Charaka samhitha Agnivesa Vol. I, Charaka-Chandrika Hindi commentary, by Dr. Brahmanand Tripathi, sutra sthana, Chaukhambha orientalia, Varanasi, Chapter- 4, Page - 136, Sloka -91

2. Sushruta Samhita, Vol - 1 Sutra Sthana, Kshuraroga nidana Adhayaya edited with Susrutavimarsini Hindi Commentary by Anant Ram Sharma, Varanasi: Chaukhambha Sanskrita Sanstana; 2008: p558.

3. Sushruta Samhita, Ayurveda tatva Sandeepika hindi commentary Author: Kaviraj Ambikadatta Shastri published by Chowkhamba Sanskrit Sansthan Varanasi reprint edition Sushruta Samhita Nidan sthana chapter 13/28.

4. Hiremath shobha G, editor, Bhaisajya kalpana, 1st edn, Bangalore: IBH Prakashan; 2000; p,326

5. Sharangadhara, Sharangadhara Samhita, English T by Shrikantha Murthi, Chaukhamba Orientallia, Varanasi, Madhyama Khanda 9/58-60.

6. Sadananda Sharma, Rasatarangani, hindi commentary, edited by Pandit Kashinatha Shastri, 4th Taranga, sloka 62-63, Delhi; Motilal Banarasidas; 11th edition, reprint, 2012. P-115.

7. Bhisagratna KK, editor. Sushruta Samhita of Sushruta, Chikitsa Sthana Vol. 2. Ch. 20, Ver. 12. 4th edition. Varanasi: Chaukhambha Sanskrit Sansthan; 1999. p. 452.

8. Bhavaprakasa Nighantu, commentary by Dr.K.C. Chunekar, AMS, ex-lecturer Department of Dravyaguna. Institute of Medical Sciences, BHU Varanasi, Chaukhambha Bharati Academy, Chapter Madhu Varag, sloka no. 30, P. 761.

*Address for correspondence
Dr. Rahish Sewda
PG Scholar,
Dept. of Kriya Sharir Vibhag,
M.M.M. Govt. Ayurved College,
Udaipur, Rajasthan.
Email:
rahishsewda1995@gmail.com
Mob: 9887439736