

## A CLINICAL STUDY ON EFFECT OF PASTE OF HARITAKI (*Terminalia chebula* Retz) IN PADADARI (CRACKED FEET)

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### ABSTRACT:

**Background:** *Padadari* is a disease described in Ayurveda under *Kshudra Roga*. It can be correlated to cracked feet. Cracked feet are a common cosmetic problem and a nuisance to most people. **Aim:** Paste of Haritaki (*Terminalia chebula* Retz) had been described in *Rasaratnasamuchchaya*, as a remedy for *Padadari* (Cracked feet). Since no known scientific study has been conducted to evaluate the effect of paste of Haritaki in treatment of *Padadari*, the present study was undertaken. **Method:** Paste of Haritaki was prepared by mixing 5g of powdered pericarps of *Terminalia chebula* with 10ml of ghee. Sixty patients having *Padadari* were selected and randomly divided into two groups and named as Group 1 and 2. Each group consisted of thirty patients. Group 1 was treated by applying 5 g of paste of *Haritaki* and kept on twenty minutes. This treatment was conducted for 14 consecutive days. Thirty patients designated as Group 2 and were given a placebo for application in a similar schedule as Group 1. Response to the treatment in both groups was recorded. Therapeutic effect was evaluated through symptomatic relief. **Results:** Patients treated with paste of Haritaki showed a statistical significant symptomatic relief in fissures in the heel, burning sensation and dryness of feet after treatment. **Conclusion:** It is concluded that paste of Haritaki is significantly beneficial in treatment of *Padadari* (Cracked feet).

**Key Words:** *Padadari*; *Terminalia chebula*, Cracked feet, Paste of Haritaki.

### INTRODUCTION:

*Padadari* is a disease, described in Ayurveda which occurs due to vitiation of *Vata Dosha*. Signs and symptoms of *Padadari* are: *Padayok Kuruthe Dari* (cracks/fissures in the feet), *Saruja* (associated with pain) and *Ruksha* (roughness and dryness of the sole).<sup>[1][2]</sup> *Padadari* can be correlated with cracked feet or heel fissures. Cracked feet (especially in the heel region) is a common foot problem for both men and women, caused by dry skin (also known as xerosis)<sup>[3]</sup>. Signs and symptoms of cracked feet are dry, itchy skin, hardness around the rim of the heel and cracks or fissures on the outer edge of the heel<sup>[4]</sup>. When the fissures are deep they may bleed and become painful. Sometimes they may also get infected. This may cause a great deal of pain and discomfort, thereby hindering the daily activities of the patient. It also affects the appearance and beauty of the feet. The trial drug, paste of Haritaki (*Terminalia chebula* Retz) is a preparation which has been described in *Rasaratnasamuchchaya* as a remedy for *Padadari*<sup>[5]</sup>. Though the paste is described as an external remedy for *Padadari*, no known scientific study had been conducted to evaluate its efficacy.

### AIMS AND OBJECTIVES:

To evaluate the effect of paste of Haritaki in *Padadari* (Cracked Feet).

### MATERIAL AND METHODS:

**Study design:** A randomized single blind, parallel, placebo controlled clinical study.

### Selection of drug

In *Rasaratnasamuchchaya*, it is mentioned to apply paste of

Haritaki in treatment of *Padadari*. Though, it is an easily prepared medicine but physicians do not used widely in Sri Lanka. The paste of Haritaki was selected to study its effect on *Padadari* (Cracked feet).

### Preparation of Paste of Haritaki

5g. of powdered pericarp of *Terminalia chebula* was added to 10ml of cow's Ghee and mixed well. This mixture was used as the research drug.

### Preparation of Placebo

Permitted yellow food colouring (Star Brand, International flavours and fragrances, India pvt. Ltd, India) was added to 10 ml. of boiled and cooled water. This was used as the placebo.

### Selection of patients

**Sampling:** Randomization was done by using a random numbers table.

**Sample size:** 60 patients

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### Study setting

The patients of either sex suffering from *Padadari*, were selected from patients attending Ayurveda hospitals of Meegoda and Lunawa in Sri Lanka from January 2007 to December 2009.

### Diagnostic criteria

*Padayok Kuruthe Dari* (cracks/fissures in the feet, especially in the heel region), *Saruja* (associated with pain) and *Ruksha* (roughness and dryness of the sole) are the diagnostic criteria of *Padadari* (Cracked feet).

### Inclusion criteria

After taking the detailed history, these patients were subjected to clinical examination. The patients having cracks/fissures in the feet with or without pain and itching were included in the present study. Further some patients complained of dryness and roughness in the feet.

### Exclusion Criteria

Patients suffering from psoriasis in hands and feet, Hyperkeratotic eczema, allergic conditions of the scalp and nutritional disorders were excluded from the research.

### Grouping

These patients were randomly divided in to two groups: namely Group 1 and Group 2 and each group consist of thirty patients. After selection of patients, they were informed about the study and their written consent was obtained. Further, patients were made to understand that they are able to withdraw from the study any time without prior notice.

### Laboratory Investigations

Routine examination on blood (WBC/DC, Hb %) and urine Full report were done but no special laboratory investigation were carried out.

### Intervention

#### GROUP 1

- **Drug:** Paste of Haritaki
- **Dose:** 5g. of Paste of Haritaki was applied over the cracked area of the sole once a day in the morning at 10.00 a.m. and was kept for 20 minutes. Then it was rinsed off.
- **Duration:** Treatment was carried daily for 14 days.
- **Follow up:** Two weeks

#### GROUP 2

- **Drug:** Placebo for paste of Haritaki, (prepared with food colouring and water)
- **Dose:** 5g. of placebo for paste of Haritaki over the cracked area of the sole once a day in the morning at 10.00 a.m. and was keep for 20 minutes
- **Duration:** Treatment was carried daily for 14 days.
- **Follow up:** Two weeks

Both groups were instructed to continue with their normal diet, and further advised to avoid using foot creams during treatment period.

### Criteria for Assessment:

Responses to the treatment were evaluated by using a specially prepared grading scale for clinical features.

Grading of the Signs and Symptoms of *Padadari* are given below

#### A. *Padayok Kuruthe Dari* (Cracks/fissures in the feet)

- 0 = No cracks/fissures in the feet
- 1 = One or two cracks/fissures in the feet
- 2 = Few cracks/fissures in the feet
- 3 = More cracks/fissures in the feet
- 4 = Numerous cracks/fissures in the feet

#### B. Depth of Cracks

- 0 = No cracks/fissures in the feet
- 1 = One or two superficial cracks/fissures in the feet
- 2 = Some superficial cracks/fissures in the feet
- 3 = Deep cracks/fissures in the feet but does not bleed
- 4 = Deep cracks in the feet and sometimes- bleeding

#### C. *Ruksha* (Roughness in the feet)

- 0 = No roughness in the feet
- 1 = Slight roughness to touch in the feet
- 2 = Mild roughness in the feet that can be seen and felt
- 3 = Moderate roughness that can be easily seen and felt
- 4 = Coarse roughness that can prominently seen and felt

#### D. *Ruksha* (Dryness of the feet)

- 0 = No dryness
- 1 = Slight dryness to touch, in the feet
- 2 = Mild dryness in the feet that can be seen and felt
- 3 = Moderate dryness in that can be easily seen and felt
- 4 = Severe dryness that can prominently seen and felt

#### E. *Saruja* (associated with pain)

- 0 = No Pain
- 1 = Mild pain in cracked areas
- 2 = Moderate pain in cracked areas
- 3 = Severe pain in cracked areas and the patient is unable to walk in the sun due to pain
- 4 = Sleep is disturbed due to pain in cracked areas

#### F. *Kandu* (Itching of the feet)

- 0 = No Itching
- 1 = Occasionally feels Itching sensation
- 2 = Intermittently feels Itching sensation
- 3 = Often feels Itching sensation
- 4 = Always feels Itching sensation

### Overall Assessment Criteria:

- Completely relieved = 100 % cure
- Partially relieved = between 1 % to 99 %
- Unchanged = 0 % Cure
- Aggravated = Symptoms become aggravated.

### Statistical Analysis

Statistical analysis was done by using Mann–Whitney U test.

#### OBSERVATIONS AND RESULTS:

The selected patients differ from each other in many ways such as *Prakriti* (body constitution), psychique and habits. They complained mostly of cracking of the feet, pain and roughness of the sole. Burning sensation of the feet was also another complaint. The therapeutic effect was evaluated through symptomatic relief and results are given in Table 1, 2

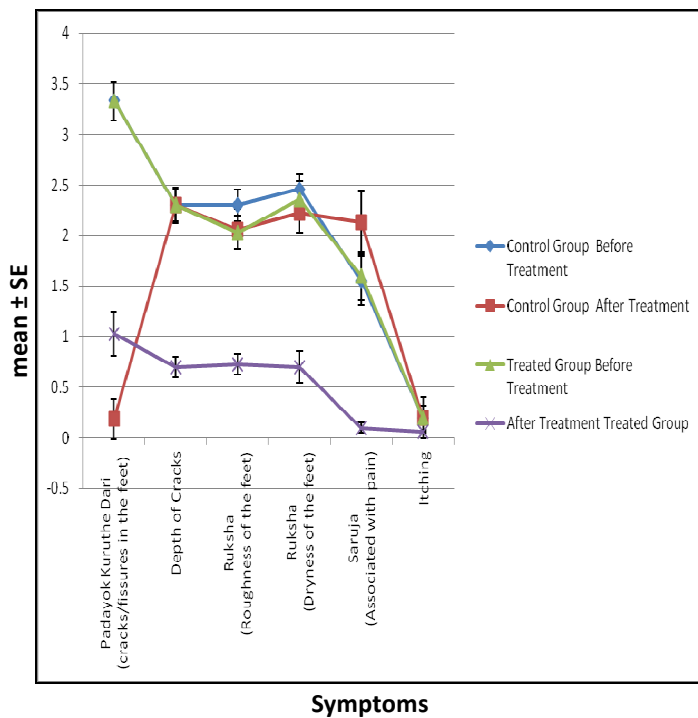
and figure 1. In Group 1, the fissures of the feet were healed in most patients after the treatment with paste of Haritaki. In some patients deep fissures were also totally cured. Burning sensation, pain and dryness were mostly relieved after the treatment. More than 80% of the symptoms in Group 2, the control group remained unchanged or aggravated. The Group 1 treated with paste of Haritaki showed statistical significant reduction in symptoms. During the follow up period patient did not complain of new cracks and aggravations of clinical features.

SYMPTOMS	Treated Group				Control Group			
	Completely relieved %	Partially relieved %	Unchanged %	Aggravated %	Completely relieved %	Partially relieved %	Unchanged %	Aggravated %
<i>Padayok Kuruthe Dari</i> (Cracks/fissures in the feet)	36.66	50.00	13.33	00.00	00.00	10.00	80.00	10.00
Depth of Cracks	36.66	53.33	10.00	00.00	00.00	10.00	80.00	10.00
<i>Ruksha</i> (Roughness of the feet)	28.57	60.71	10.71	00.00	06.00	20.00	84.00	00.00
<i>Ruksha</i> (Dryness of the feet)	44.82	51.72	00.00	3.44	10.00	10.00	80.00	00.00
<i>Saruja</i> (Associated with pain)	85.71	14.28	00.00	00.00	00.00	10.00	20.00	70.00
<i>Kandu</i> (Itching)	33.33	66.66	00.00	00.00	06.00	10.00	80.00	04.00

Symptom	Control group (mean ± SE)		Treated group (mean ± SE)	
	Before treatment	After treatment	Before treatment	After treatment
<i>Padayok Kuruthe Dari</i> (cracks/fissures in the feet)	3.33 ± 0.19	3.19±0.20	3.33 ± 0.19	1.03 ± 0.22*
Depth of Cracks	2.30 ± 0.16	2.30±0.18	2.30 ± 0.16	0.70 ± 0.10*
<i>Ruksha</i> (Roughness of the feet)	2.30 ± 0.16	2.06±0.20	2.03 ± 0.17	0.73±0.10 *
<i>Ruksha</i> (Dryness of the feet)	2.46 ± 0.15	2.23 ± 0.20	2.36 ± 0.18	0.70 ± 0.16*
<i>Saruja</i> (associated with pain)	1.56 ± 0.24	2.13 ± 0.31	1.60 ± 0.24	0.10 ± 0.05*
<i>Kandu</i> (Itching)	0.20 ± 0.20	0.20 ± 0.20	0.20 ± 0.12	0.06 ± 0.01*

\* p < 0.05compare to control

**Figure 1: Symptomatic relief during the treatment with with paste of Haritaki in Padadari (Cracked feet) ( mean ± SE)**



#### DISCUSSION:

According to Susrutha Samhita, *Padadari* is a disease caused by vitiation of *Vata Dosha*. The cracks/fissures in the feet, dryness and roughness of the feet and pain of the heel occur due to vitiation of *Vata Dosha*. According to Ayurveda, *Haritaki* (*T. chebula*) pacifies all three vitiated humours that is to say *Vata*, *Pitta* and *Kapha*<sup>[6]</sup>. It especially pacifies *Vata Dosha*. Ghee pacifies vitiated *Vata* and *Pitta*. Therefore paste of *Haritaki* helps to pacify vitiated *Vata Dosha* in patient suffering from *Padadari* and is beneficial in reducing the symptoms. Further, paste of *Haritaki* due to its *Vrana Ropana Guna* (wound healing action)<sup>[6]</sup> helps to heal cracks and fissures in feet. Burning sensation which occurs due to vitiation of *Pitta Dosha*, is reduced after treatment, as ghee and *Haritaki* pacify vitiated *Pitta Dosha*.

Sireeratawong et al., reported that fruits of *T. chebula* possess dose-dependent anti-inflammatory action in rats<sup>[7]</sup>. Singh and Sharma revealed that hydroalcoholic extract of *T. chebula* fruit promotes significant wound healing in diabetic rats<sup>[8]</sup>. Kannan et al., narrated that the *T. chebula* fruit extract was highly effective against *Salmonella typhi*, *Staphylococcus epidermis*, *Staphylococcus aureus*, *Bacillus subtilis* and

*Pseudomonas aeruginosa*<sup>[9]</sup>. According to these findings, the fruit of *T. chebula* promotes wound healing and beneficial in *Padadari* (Cracked heel). Ghee is used as a home remedy for wounds specially burns from ancient days. Hence paste of *Haritaki* effectively heals cracks in *Padadari* (Cracked heel).

#### CONCLUSION:

The paste of *Haritaki* completely or partially reduced the symptoms of *Padadari*. It is concluded that the paste of *Haritaki* is an effective treatment for *Padadari* (Cracked feet) which can be used externally.

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