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A clinical study to evaluate the efficacy of *Keechakadi Taila* in *Darunaka*

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ABSTRACT

Darunaka (dandruff) is a disorder mentioned under the spectrum of *Shirokapalagata Roga/Kshudra Roga* by various *Acharyas*. It is a *Kapha-Vata* predominant disorder of *Shiro-Kapala* (scalp), characterized by *Kandu* (itching), *Kesha-Chyuti* (hair fall), *Keshabhumi-Rukshata* (dryness of scalp) and *Keshabhumi-Sphutana* (scaling). *Shiroabyanga* (oil massage to scalp) with *Keechakadi Taila* is mentioned as a treatment modality for *Darunaka* by *Vangasena*. It contains *Keechaka* (*Bambusa arundinaceae*), *Sarshapa Taila* (mustard oil), *Gomutra* (cow's urine) as ingredients. In general all *Tailas* (oils) alleviates *Vata-Dosha* and does not aggravate *Kapha-Dosha*. It is *Twak Prasadaka* (nourishing), thus helping in treating the disease by *Samprapthi Vighatana* (breaking the pathogenesis). Though there are plenty of treatment options available for dandruff, there is no promising treatment in any of the allied sciences assuring its complete cure, avoiding recurrence. Thus with the aim to know the efficacy of *Keechakadi Taila* in treating *Darunaka* and also to know how effectively it can prevent/ reduce interval between recurrences of *Darunaka* the present study was carried out. The study showed statistically significant result in the management of *Darunaka*.

Key words: *Darunaka*, *Keechakadi Taila*, *Kandu*, *Kesha-Chyuti*, *Keshabhumi-Rukshata*, *Keshabhumi-Sphutana*

INTRODUCTION

Dandruff is a common persistent relapsing scalp disorder with prevalence rate of 50%.^[1] Though it is not a dreadful condition, it is one of the most persistent and recurrent condition of scalp. Itchy, scaly scalp may

cause social embarrassment in the sufferers, making them anxious and worried leading to even psychological issues later. In Ayurvedic literature we can find that most of the *Nidanas* of *Darunaka*^[2,3,4] are said to cause *Vata Vridhi*. When *Gunataha Vridhi* of *Vata* is seen in *Kapala Pradesha*, it results in *Rukshata* of *Kapala Pradesha* and *Keshabhumi Sphutana*. Other predominant *Dosha* vitiated is *Kapha Dosha*. This vitiated *Kapha* in *Kapala Pradesha* which is dominant of *Kapha Dosha*, results in manifestation of symptoms like *Kandu*. Vitiated *Vata* causes *Kesha Chyuthi*, associated *Kapha* blocks *Roma Kupa* and prevents further hair growth. Thus *Kapha-vata Doshas* together, results in manifestation of *Darunaka*. *Lalata-Siravyadha*, *Nasya*, *Shirobasti*, *Shirolepa* and *Shiro-Abyanga* are the line of treatment mentioned for *Darunaka* in our classics.^[5] *Shiroabyanga* with *Keechakadi Taila* is mentioned as a treatment modality for *Darunaka* by *Vangasena*.^[6] All the *Dravyas* of

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Keechakadi Taila have *Teekshna-Ushna Guna* and *Lekhana, Kapha-Vatagna* property. *Keechaka* i.e., Bamboo is also being extensively used in hair care products in pharma and cosmetic industries nowadays. There is no evidence/studies carried out on utility of *Vamsha* in any hair, scalp related disorders in Ayurveda. Taking all the above points into consideration clinical study of *Keechakadi Taila* in *Darunaka* is planned to validate the efficacy of *Keechakadi Taila*.

AIMS AND OBJECTIVES

1. To know the efficacy of *Keechakadi Taila* in treating *Darunaka*.
2. To know how effectively it can prevent/ reduce interval between recurrences of *Darunaka*.

MATERIALS AND METHODS

Source of data: 30 patients diagnosed with *Darunaka*, fulfilling inclusion criteria were selected from OPD and IPD of SDMCA, Udupi.

Study design: It was a non-randomized, single group, open label efficacy study with treatment as primary purpose. Study included 30 diagnosed patients of *Darunaka*, fulfilling diagnostic and inclusion criteria, assessed based on specially formulated gradation index.

Intervention

Recruited subjects were administered with *Keechakadi Taila* as mentioned below

Table 1: Intervention of clinical study

Dose	Quantity sufficient for application on the scalp
Dosage form	<i>Taila</i>
Route of Administration	Parenteral (local application)
Mode of drug administration	Once daily in the morning before bath for 30 minutes
Duration of study:	30 days of study with 15 days of intervention and follow up on 15 th day and 30 th day.

Diagnostic criteria

The diagnosis was made based on following *Lakshanas* of *Darunaka*.^[7,8]

- Itching (*Kandu*)
- Hair fall (*Keshachyuti*)
- Dryness of scalp (*Keshabhumi Rukshata*)
- Scaling (*Keshabhumi Sphutana*)

Inclusion criteria

- Subjects fulfilling diagnostic criteria who were willing to give their written informed consent and follow up the protocol of study were selected irrespective of gender, occupation, food habits and chronicity.
- *Darunaka* manifesting only on scalp.
- Both fresh and treated case of *Darunaka* who were not under any medications currently.
- Age group between 18 to 60 years.

Exclusion criteria

- Patients suffering from diseases of scalp other than *Darunaka*.
- Patients suffering from major systemic disease.
- Patients on oral antibiotics and antimycotics.
- Patient with hypersensitivity, immunodeficiency and known drug allergies.
- Pregnant women, lactating mother, children.

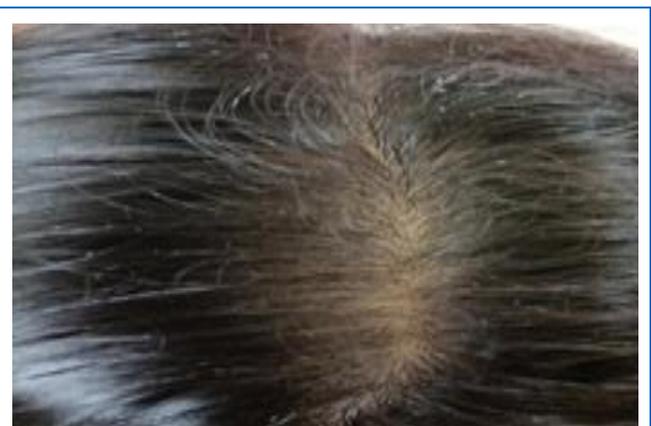


Figure 1: Dandruff scales

Assessment criteria

Assessment was made on 0th, 15th and 30th day using gradation index, based on

1. *Kandu* - Itching
2. *Kesha-Chyuthi* - Hair fall
3. *Keshabhumi-Sphutana* - scaling
4. *Keshabhumi-Rukshata* - dryness of scalp

Gradation index of clinical study***Kandu***

- 0 - Absent
- 1 - Occasionally present
- 2 - Constantly present without hampering routine activities
- 3 - Constantly present hampering routine activities

Kesha Chyuthi

- 0 - Normal
- 1 - Mild loss
- 2 - Moderate loss
- 3 - Maximum loss

Kesha Bhumi Sphutana

- 0 - Absent
- 1 - Visible inside the hair
- 2 - Visible over the hair
- 3 - Spreaded over the shoulder

Kesha Bhumi Rukshatha

- 0 - Absent
- 1 - Occasionally present
- 2 - Without discomfort on the scalp
- 3 - With discomfort on the scalp

Statistical analysis: Statistical analysis was carried out using Wilcoxon signed rank test.

OBSERVATIONS

Age: It was found that incidence of *Darunaka* was more in age group between 24-29 years. The reason might be, at this age group most of the individuals are beauty conscious, this might attract them to use various range of cosmetic products. Chemical in the cosmetics can cause local irritation and may cause dandruff. Hormonal changes, stress etc. are also common in this age group, contributing to increased incidence of dandruff.

Gender: It was observed that incidence of *Darunaka* was more in females. Long hair might cause difficulty in maintaining the hygiene, leading to dandruff. Highest use of cosmetics by females too contributes to this.

Socio-economic status: It was observed that incidence of *Darunaka* was more in upper middle-class individuals. Sedentary life style, unhealthy food habits might have been the contributing factor here.

Occupation: It was observed that incidence of *Darunaka* was more among students. Stress, lack of hygiene might be the contributing factor for the same.

Nidana: It was observed that incidence of *Darunaka* was more in the individuals who indulged in *Ratrijagarana*. *Ratrijagarana* causes *Vata Prakopa* and also hormonal imbalance, contributing to *Darunaka*.

Relieving factor: Most of the individuals found relief from *Darunaka*, by practicing regular head bath. Hygiene is the contributing factor here.

Diet: It was observed that incidence of *Darunaka* was more in individuals who had mixed diet. May be spicy oily food, causes *Tridosha Prakopa*, leading to *Darunaka*.

Desha: It was observed that incidence of *Darunaka* was more in individuals of *Anupa Desha*. As most of the individuals included in the study were from local region i.e., *Anupa Desha*, this cannot be justified and applied to large sample.

Prakruthi: It was observed that incidence of *Darunaka* was more in *Vata-Pitta Prakruthi* individual. Only after conducting study on large sample we can conclude

about the association between incidence of *Darunaka* and *Shareera Prakruthi*.

Frequency of head bath and oil application to scalp: It was observed that incidence of *Darunaka* was more in individuals who applied oil weekly once to scalp and took head bath weekly once. Lack of hygiene is the contributing factor here.

RESULTS

The results of various parameters analysed statistically with Wilcoxon signed rank test are tabulated below.

Table 2: Results of clinical study

Parameters	Mean			Z value		P value		Interpretation	
	BT	AT	FU	BT - AT	BT - FU	BT - AT	BT - FU	BT - AT	BT - FU
<i>Kandu</i>	1.1 85 2	0.3 33	0.2 33 3	- 4. 76 7	- 4. 45 6	0. 00	0. 00	HS	HS
<i>Keshachyuthi</i>	1.9 58 3	1.5 33 3	1.5 00	- 1. 00	- 1. 41 4	0. 31 7	0. 15 7	NS	NS
<i>Keshabhumi Rukshata</i>	1.1 87 5	0.0 0	0.0 33 3	- 3. 75 5	- 3. 62 6	0. 00	0. 00	HS	HS
<i>Keshabhumi Sphutana</i>	1.7 00	0.1 00	0.5 33 3	- 4. 89 4	- 4. 31 1	0. 00	0. 00	HS	HS

Results of Wilcoxon signed rank test for *Kandu*: When *Kandu* was compared before treatment (mean 1.1852) to after treatment (mean 0.333) with Wilcoxon signed rank test, 27 subjects showed negative ranks, no subjects showed positive ranks and 1 subjects showed no change with z value -4.767 and p value 0.000, which is statistically highly significant.

When *Kandu* was compared before treatment (mean1.1852) to follow up (mean-0.2333) with

Wilcoxon signed rank test, 22 subjects showed negative ranks, no subjects showed positive ranks and 5 subjects showed no change with z value -4.13 and p value 0.000, which is statistically highly significant.

Results of Wilcoxon signed rank test for *Keshachyuthi*: When *Keshachyuthi* was compared before treatment (mean 1.9583) to after treatment (mean-1.5333) with Wilcoxon signed rank test, 1 subject showed negative ranks, no subjects showed positive ranks and 23 subjects showed no change with z value -1.0 and p value 0.317, which is statistically not significant.

When *Keshachyuthi* was compared before treatment (mean1.9583) to follow up (mean- 1.500) with Wilcoxon signed rank test, 2 subjects showed negative ranks, no subjects showed positive ranks and 22 subjects showed no change with z value -1.414 and p value 0.157, which is statistically not significant.

Results of Wilcoxon signed rank test for *Keshabhumi Rukshata*: When *Keshabhumi Rukshata* was compared before treatment (mean - 1.1875) to after treatment (mean- 0.00) with Wilcoxon signed rank test, 16 subject showed negative ranks, no subjects showed positive ranks and no subjects showed no change with z value - 3.755 and p value 0.00, which is statistically highly significant.

When *Keshabhumi Rukshata* was compared before treatment (mean - 1.1875) to follow up (mean- 0.0333) with Wilcoxon signed rank test, 15 subjects showed negative ranks, no subjects showed positive ranks and 1 subject showed no change with z value -3.626 and p value 0.00, which is statistically highly significant.

Results of Wilcoxon signed rank test for *Keshabhumi Sphutana*: When *Keshabhumi Sphutana* was compared before treatment (mean 1.700) to after treatment (mean- 0.100) with Wilcoxon signed rank test, 30 subject showed negative ranks, no subjects showed positive ranks and no subjects showed no change with z value -4.894 and p value 0.00, which is statistically highly significant.

When *Keshabhumi Sphutana* was compared before treatment (mean 1.700) to follow up (mean- 0.533) with Wilcoxon signed rank test, 23 subjects showed

negative ranks, no subjects showed positive ranks and 7 subjects showed no change with z value -4.311 and p value 0.00, which is statistically highly significant.

DISCUSSION

The clinical study was carried out with the purpose of knowing how effectively *Keechakadi Taila* can treat *Darunaka*. How effective it is to prevent/ reduce interval between recurrences of *Darunaka*.

Shiro-Abyanga

Shiro-Abyanga is one among *Murdha Taila*.^[9] It is a *Bahya Snehana* procedure. *Acharya Vagbhata* has indicated *Abyanga* in *Rukshata*, *Kandu* of *Shira-Kapala* and in *Mala Sanchaya* in *Shirapradesha*.^[10] It is advised to practice *Abyanga* regularly once in a day or once in two days or once in three days. As *Abyanga* do not vitiate any *Dosha*, depending on the formulation and condition the frequency of *Abyanga* can be fixed according to ones *Yukti*. *Dalhana* has told the effect of *Abyanga* on various *Dhatus* according to the duration. He said *Abyanga Dravya* reaches *Romakupa* by 300 *Matrakala* and *Twacha* by 400 *Matrakala*, which can be taken as 1-2 minutes.

In the present study *Abyanga* was advised daily, once before bath in the morning. The patients were asked to apply lukewarm *Keechakadi Taila* for the scalp, massage each area for 2 minutes later leave oil for 30 minute and then take head bath using the soap/ shampoo which they used regularly.

Darunaka is a *Kapha-Vata* predominant disorder of the scalp. Lack of hygiene is said as one of the cause for *Darunaka*. *Keechakadi Taila* contains drugs which are *Ushna*, *Teekshna*. *Abyanga* reduces *Vata Dosha*. *Keechakadi Taila* does *Lekhana Karma* and also is *Kapha Vata Shamaka*. Considering all this points duration of treatment was fixed 15 days with daily *Shiro-Abyanga*. As this was the first clinical study carried out on the drug minimum duration was fixed to see the effect. As 300-400 *Matrakala* was duration required by drug to enter *Romakupa* and *Tawk*, massage to each area for 2 minutes was advised. Though it is said that absorption by *Romakupa* and

Twacha takes place within 2 minutes, asking patients to apply oil, massage for 2 minutes and then wash, would not be clinically practiced. Also leaving oil on scalp for long hours/ overnight would engulf surrounding dust and could aggravate the symptoms like *Kandu* and scaling. So, 2 minutes massage, head bath after 30 minutes was advised.

Mode of absorption of *Abyanga Dravya*

Brajaka Pitta located in *Twak*, helps in absorption and metabolism of applied oil. *Veerya* of the drug after *Paka* is absorbed by *Romakupa* and later by different *Dhatus*. Thus, it nourishes the scalp, scalp hair and treats the ailment.

Taila is a dosage form where active components are present in lipid media. Drugs in lipid media can be absorbed easily by the cell membranes, skin layers through penetration between cells and also diffusion through the cells. Lukewarm state of the oil, soft gentle massage improves the blood circulation to *Kapala Pradesha*. This intern helps in fast absorption of oil. *Sneha Gunas* also play an important role in absorption of *Aushadhis*.

Probable mode of action

Effect on *Kandu*: *Keechakadi Taila* showed highly significant result in the management of *Kandu*. All the drugs of the formulation had *Kandugna* property. The combined effect of all these drugs might have been added up, showing the highly significant reduction in *Kandu*.

Effect on *Keshabhumi Rukshata*: *Keechakadi Taila* showed highly significant result in the management of *Keshabhumi Rukshata*. *Sneha* having inbuilt *Snigdha Guna*.^[10] regular massage of it to scalp might have resulted in combating *Rukshata* of scalp.

Effect of *Keshabhumi Sphutana*: *Keechakadi Taila* showed highly significant result in the management of *Keshabhumi Sphutana*. All the drugs in the formulation have *Lekhana* property. This might have helped in scrapping out the dead cells, thus reducing scaling.

Effect on *Kesha Chyuti*: *Keechakadi Taila* showed non-significant result in the management of *Kesha Chyuti*.

Though *Keshya* effect of individual drug of the formulation has been proved through various researches, *Keechakadi Taila* showed non-significant result. *Keshabhumi* is affected in *Darunaka*, making hair root weak. *Keechakadi Taila* due to *Lekhana* property might have scraped weak hairs along with scales, resulting in non-reduction of hair fall. Duration of study too matters here. Long term use of the oil may kill *Krimis* in *Keshabhumi* and later may help in growth of healthy hair.

CONCLUSION

Keechakadi Taila showed statistically and clinically highly significant results in management of *Darunaka* in terms of *Kandu*, *Keshabhumi-Rukshata* and *Keshabhumi-Sphutana*. It showed non-significant result in management of *Kesha-Chyuti*.

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