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# A clinical evaluation of *Bakuchi Hartal Lepa* and *Amalaki Khadir Kashayam* in the management of *Switra* (Vitiligo) - A Pilot Study

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## ABSTRACT

Vitiligo is usually patchy depigmentary disorder, due to reduced or absent melanocytes. Most paediatric cases present after first decade of life with well-demarcated milky-white or hypopigmented patches. In *Ayurveda* vitiligo is known as *Shwitra* and described under *Kushtha*. The *Tridoshas* (*Vata, Pitta,* and *Kapha*) and *Dhatus* (such as *Rasa*, *Rakta*, *Mamsa*, and *Meda*) vitiations are what give rise to this variety of *Kushta* in the classical *Ayurvedic* texts. The disease is significant primarily because it raises cosmetic concerns, which ultimately cause the sufferer to experience several socialised psychological stigmas. *Ayurveda* provide effective and safe treatment protocol for vitiligo. In the present Pilot study *Amalaki-Khadir Kashaya* with *Bakuchi (Prakshep Dravya)* is used as internal medication and *Bakuchi, Hartala Lepa* with *Gomutra* as external therapy in 8 patients. The *Gunas* of these drugs are opposite to *Doshas* responsible for *Switra*. This study shows significant decrease in number of hypopigmented patch as well as improvement in the psychological status of the patient.

**Key words:** *Vitiligo, Switra, Kushtha Roga, Amalaki-Khadir Kashaya, Bakuchi*

## INTRODUCTION

In *Ayurveda* the disease *Sweta Kushtha* or *Switra* is grouped under skin diseases and mentioned in *Kushtha Roga Chikitsa Adhyaya*[1] characterised by whitish discoloured patches on the body. Vitiligo occurs when pigment producing cells die or stop functioning. It can affect any part of the body including mouth, hair & eyes. It can begin at any age.[2]

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The prevalence of vitiligo ranges from 0.5% to 1%.[2] Its highest incidence has been reported amongst Indians from the Indian subcontinent. India is considered to have the highest prevalence in the world, at about 8.8%.[2]

The family history has been found to affect the prevalence of Vitiligo amongst such people prevalence is high ranging from 7.7% to more than 50%. The mean age of onset is also earlier in those with a positive family.[3]

The gender-wise distribution of the disease is equal affecting adults and children of both sexes are equally. However, more females were reported to have this condition. It may due to the higher social impact posed by this condition on women and girls. Nearly 50% of the patients Vitiligo developed before the age of 20 years and in almost 70-80% patients before the age of 30.[3] Most of the vitiligo cases reported beginning of disease during the period of active growth.

Vitiligo is a multifactorial polygenic disorder with a complex pathogenesis. It is related to both genetic and

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nongenetic factors. Although several theories have been proposed about the pathogenesis of vitiligo, the precise cause remains unknown. Generally agreed upon principles are an absence of functional melanocytes in vitiligo skin and a loss of histochemically recognized melanocytes, owing to their destruction. However, the destruction is most likely a slow process resulting in a progressive decrease of melanocytes. Theories regarding destruction of melanocytes include autoimmune mechanisms, cytotoxic mechanisms, intrinsic melanocyte defects, oxidant-antioxidant mechanisms, and neural mechanisms.

Medications and light-based therapies are available to help restore skin colour or even out skin tone, though result vary and are unpredictable and some treatment have serious side effects.

The disease is caused by various erroneous dietary habits & life style which ultimately aggravate the *Tridoshas* especially *Kapha Dosha* along with *Rasa, Rakta, Mansa* and *Meda Dhatu.* Many *Ayurvedic* formulations are used for the regeneration of melanocytes in the hypopigmented patches among which *Bakuchi, Hartal, Khadir* are some effective drugs mentioned in *Ayurvedic* texts. The present study was planned to study the efficacy of such drugs. 8 cases of *Switra* treating with *Bakuchi Haratal Lepa* and *Amalaki Khadir Kashaya* (orally) were analysed. On the basis of observation and result it was found that the *Ayurvedic* formulations were very much effective in managing the disease *Switra.* Out of 08 cases 50% patients were seen with marked improvement, 12.5% patients were seen with mild & moderate improvement where as 25% patients were found with complete cure.

## Aim and Objective

To evaluate the effect of *Bakuchi Hartal Lepa* and *Amalaki Khadir Kashayam* in the management of *Switra* (Vitiligo)

## Materials and Methods

### Source of data

The patients suffering from *Switra* (Vitiligo) attending the OPD of Pt. Khushilal Shrma Govt. Ayurvedic Hospotal Bhopal were screened and allocated to the study. Overall, 10 patients were included in the study fulfilling the diagnostic, inclusion and exclusion criteria.

A detailed history taking and physical examination were carried out in these patients. The clinical data along with the elaborated assessment of the condition were recorded in specially designed case proforma.

Among 10 patients, 8 completed the treatment. 2 patients did not complete the whole treatment due to unknown cause.

### Study Design

The present study is a pilot clinical study conducted in the department of Panchakarma of Pt. Khushilal Sharma Govt. Ayurvedic College and Institute Bhopal.

**Intervention Period:** 21 days

### Inclusion Criteria

- Patients suffering from *Switra* (Vitiligo).
- Duration of the disease being 1 to 2 years.
- Age between 16 and 60 years.
- Patients who are willing to participate in the study.

### Exclusion Criteria

- Hypopigmentation due to scar formation as a result of burns or other injuries (*Vranaja Switra*).
- Patients with any chronic disease that needs regular medication.

### Assessment Criteria

Patients were observed for 21 days. Assessment was done before the medical interventions. Then, patients were assessed on the 7$^{th}$ day and 14$^{th}$ day. Final assessment was done after completion of the therapy that is on the 21$^{st}$ day. Assessment was done based on the size, colour and number of the lesions. VETI score was used for assessment.[4]

### VETI score:

(Percentage of head involvement × grade of tensity) + (Percentage of trunk involvement × grade of tensity) 4+ (Percentage of upper limbs involvement × grade of tensity) 2+ (Percentage of lower limbs involvement ×

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grade of tensity) 4+ (Percentage of genitalia involvement × grade of tensity) 0.1

The coefficients reported in this formula are based on percent of skin surface by the rule of nines. Accordingly, the coefficient of head is 1 (9:9=1), trunk and lower limb is 4 (36:9=4), upper limb is 2 (18:9=2) and genitalia is almost 0.1(1:9= 0.1).

- Percentage of involvement: **p**
- Tensity: **T**
- **VETI:**

(Ph × Th) + (Pt × Tt)4 + (Pu × Tu)2 + (Pl × Tl)4 + (Pg × Tg)0.1

5 + 20 + 10 + 20 + 0.5 = 55.5

The maximum score of VETI is 55.5.

### Statistical Analysis

After completion of the treatment results were statistically analyzed in the terms of mean score, standard deviation (SD), standard error (SE), paired t test, and p value at various levels.

### Criteria for Overall Assessment

The total effect of the therapy on 8 patients of *Switra* was calculated by taking the mean of percentage of improvement. The final overall effect was graded as cured, marked improvement, moderate improvement, mild improvement, and no improvement [Table 1].

**Table 1: Criteria for overall assessment of the intervention**

| Percentage of improvement | Effect of Therapy |
|---|---|
| < 25% | No improvement |
| 25% - 49% | Mild improvement |
| 50% - 74% | Moderate improvement |
| 75% - 99% | Marked improvement |
| 100% | Cured |

### Treatment Regimen

### Oral Medicine

*Kashayam*: *Khadira Yavakut* (heartwood powder) 1 part, *Amalaki Phala Yavakut* (Fruit powder) 1 part.

*Prakshepa Dravya*: *Bakuchi Beeja Churna*

Dose: 40 ml twice a day empty stomach [Table 3]

### External application

*Lepa*: The paste is to be prepared with *Shuddha Hartala Churna* 1 part and *Bakuchi Beeja Churna* in 3part, mixing with *Gomutra* (cow's urine) [Table 2].

Process of Application*:* Patients were advised to apply *Lepa* over the hypopigmented/ depigmented patches in the morning and advised to expose to the sun between 8 AM and 10 AM for 20 to 30 min.

**Table 2: Ingredients of *Lepa***

| SN | Name of Drugs | Botanical Name/ Chemical Name | Used part of the plant | Used form | Part |
|---|---|---|---|---|---|
| 1. | *Shodhit Hartal* | Arsenic Trisulfide | - | *Churna* | 1 Part |
| 2. | *Bakuchi* | *Psoralia corylifolia Linn* | Beeja (seed) | *Churna* | 3 Part |
| 3. | *Gomutra* | - | | | |

**Table 3: Ingredients of *Kashaya***

| SN | Name of Drug | Botanical Name | Used Part of the Plant | Used form | Quantity |
|---|---|---|---|---|---|
| 1. | *Khadira* | *Acacia catechu (Linn.f.)* Willd | *Sara* (heartwood) | Churna | 5gm |
| 2. | *Amla* | *Phyllanthus emblica* | *Phalamajja* (Fruit) | Churna | 5gm |
| 3. | *Bakuchi* | *Psoralia corylifolia Linn* | Beeja (seed) | Churna | 3gm |

## RESULT

The assessment was made by adopting the standard scoring methods related to vitiligo, which include the size and number of hypopigmented/ depigmented patches. (VETI Score)

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**Table 4: Effect of treatment on the size of patches**

| Criteria of assessment | Mean | | MD | SD | SE | Paired t | P |
|---|---|---|---|---|---|---|---|
| Size of patches | BT | AT | 4.20 | 5.26 | 1.86 | 6.6 | 0.0003 |
| | 17.5 | 5.1 | | | | | |

1. Effect of treatment on the size of patches: Reduction of size of the patches was found to be significant at the end of treatment [Table 4 and Figure 1].

**Table 5: Effect of treatment on the size of patches**

| Criteria of assessment | Mean | | MD | SD | SE | Paired t | P |
|---|---|---|---|---|---|---|---|
| Number of patches | BT | AT | 1.15 | 3.47 | 1.23 | 4.17 | 0.0004 |
| | 7.2 | 2.1 | | | | | |

2. Effect of treatment on the number of patches: The numbers of patches were significantly reduced after treatment [Table 5 and Figure 2].

**Table 6: Effect of treatment on the Basis of VETI Score**

| Criteria of assessment | Mean | | MD | SD | SE | Paired t | P |
|---|---|---|---|---|---|---|---|
| VETI Score | BT | AT | 3.6 | 2.84 | 1.0 | 7.3 | 0.0001 |
| | 12.1 | 4.8 | | | | | |

3. Effect of treatment on the basis of Vitiligo Extent Tensity Index (VETI) Score: The combined assessment of the extensiveness and pigmentation status was analysed both before and after the treatment by using the VETI Score. Significant improvement was observed in the patients in term of this criterion. [Table 6]

**Table 7: Overall assessment of the intervention**

| SN | Overall assessment | No. of patients | Percentage |
|---|---|---|---|
| 1. | Cured | 02 | 25% |
| 2. | Marked improvement | 04 | 50% |
| 3. | Moderate improvement | 01 | 12.5% |
| 4. | Mild improvement | 01 | 12.5% |
| 5. | No improvement | 00 | 00% |

Considering the overall effect of the intervention, 50% of the patients had marked improvement, 12.5% of the patients were noted to have moderate and mild improvement and no patients were found with unimproved condition. [Table 7] Thus, the overall outcome of this study was significant, indicating that the trial drugs as per reference of the *Ayurveda* text have an effective role in the treatment of *Switra*.

## Discussion

Vitiligo is a skin disease characterized by milky white patches with hypopigmented border due to failure of melanin formation.[5] This is a *Tridoshaja Vyadhi* with a predominance of *Pitta*, where *Dushyas* are *Rakta* (Blood), *Mansa* (Muscle), and *Medadhatu* (Fat Tissues).[6] Since the response rate to the currently known treatments is so low, an effective treatment has yet to be discovered. Modern medicines are associated with so many complications and having various side effects with toxicity. Ancient *Ayurvedic* herbs, which are primarily used to address the disease's aetiology, can be used to treat vitiligo.

In this study *Amalaki*, *Khadir*, *Bakuchi* and *Hartal* are main drugs.

*Acharya Charaka* has described *Khadir* as the best drug of choice for *Kushta*[7] having *Shamak* effect on *Rakta Dhatu* and *Pitta Dosha.*

*Ashtanga Sangraha* explains this drug as best for the treatment of all kind of skin disease including *Switra.*

*Laghu Guna, Tikta Rasa, Katu Vipaka* and *Sheeta Veerya* of drug balance *Kapha* and *Pitta Dosha*.

*Amalaki* is rich in vitamin C and has antioxidant properties. It helps to boost the immune system and improves the production of melanin.

*Bakuchi* is a renowned herb that has been used in *Ayurveda* for centuries to treat skin conditions.[8] It has been extensively used in hypopigmentation with great success. It contains psoralens, which on exposure to the sun rays brings out melanin in the depigmented lesions.[9] *Psoralea corylifolia* is a proven antibacterial,

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antistaphylococcal, antifungal, anti-inflammatory, vasodilator, skin photosensitizing, antitumour, immunomodulatory agent. It also contains bakuchiol, bavchinin, bavchin and corylin which have antioxidant properties, and has been found to stimulate melanin production in the skin. Melanin is the pigment with which the skin gets its colour. *Vagbhata* says that healthy *Strotas* are pillars of life and the abnormal state of *Strotas* is disease. Diets, life style that aggravate *Dosha* and lodge in the *Dhatu* are bound to disturb the functioning *Strotamsi*. *Katu, Tikta Ras, Katu Vipaka, Ushna Virya* and *Ruksha Guna* of *Bakuchi* correct *Stroto-Dushti* in *Shwitra*.

Purified *Hartal*, an arsenic compound, was used as a topical medicine in the study.

*Haratala* was used in the *Yoga* along with *Bakuchi*. *Haratala* is best owed with immune modulating properties, and widely used for some autoimmune disorders in which the etiopathogenesis is deranged immunity.[10] Arsenic is absorbed through skin in addition to other routes. In *Shwitra*, the deranged immune system destroys the pigment synthesizing melanocytes. *Haratala* probably breaks this pathogenesis and prevents the self-destruction of melanocytes.[11] The *Vyavayi* and *Ashukari* properties of *Hartala* may help the drug to reach the site quickly and remove the obstruction of *Srotasa*.[12]

*Gomutra* is indicated in many skin conditions. It is having properties like *Ruksha, Tikshna, Ushna, Laghu* and having *Krimihar*, *Kushthaghna*, *Ksharatva* and *Vata-Kaphashamaka* effect. These properties induce inflammation when applied over skin with *Bakuchi* and *Hartala*. *Lepa* was applied in early morning because heat of the body comes out through the skin pores at night normally which is obstructed if applied at night.[13]

**Probable mode of action of *Lepa*** - *Lepa* has dominancy of *Tikta-Katu Rasa* with *Katu Vipaka, Ushna Veerya*, and *Sara-Tikshna Guna*. It also possesses *Kushthaghna*, *Krimighna*, *Deepana*, *Pachana* & *Kandughana* properties.[14] In *Switra Lepa* might have helped in *Samprapti Vighatana*. *Bakuchi*, *Haratala* and *Gomutra* (cow's urine) are specially indicated for *Shwitra*.[15]

Local application of medicines causes inflammation at the site due to presence of Psoralen and *Ushna* property of *Gomutra*. It increases the blood supply hence more *Rasa* and *Rakta Dhatu* flow which brings back the normal skin colour.

## CONCLUSION

A clinical trial with *Bakuchi Haratal Lepa* with *Gomutra* as external application and *Amalaki Khadir Kashyam* orally has shown encouraging results in the repigmentation of the affected skin. Not much complication was observed in the patients at the end of the study. So, this treatment protocol can be a good option for the management of *Switra* (Vitiligo). In the current study, as the sample is very small and the follow-up period is short, to arrive at a conclusion about the effectiveness and safety of the treatment, a clinical trial with a big sample size and a long follow-up period will be needed.

| Before treatment | After treatment |
|---|---|
|  |  |
|  |  |

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