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# Clinical Efficacy of *Dhatryadi Ghanavati* in *Shvitra* (Vitiligo)

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## ABSTRACT

**Background:** *Shvitra* (vitiligo) is a kind of skin disorder comprising of white coloured skin patches which is considered as a social stigma. Worldwide prevalence of Vitiligo is observed as 1% of the total population. Due to the chronic nature, long term treatment, lack of uniform effective therapy and unpredictable course the disease is usually very demoralizing for patients. **Aim:** To study the efficacy of '*Dhatryadi Ghanavati*' in the management of *Shvitra*. **Materials and Methods:** Total 50 patients of *Shvitra* from OPD and IPD unit of Dr. M.N. Agashe Hospital, Satara were selected and provided with *Dhatryadi Ghanavati* 1gm B.D. for the duration of 3 months. **Results:** 100% relief was observed in *Daha* and *Kandu* followed by 83.33% relief was observed in *Rukshata*. 34.51% improvement was seen in number of patches, 34.82% in size of patches and 34.29% in percentage area involved. Color of the patches was improved by 69.01% whereas 44% improvement was seen in hair discoloration. **Conclusion:** The compound formulation '*Dhatryadi Ghanavati*' was found as an effective remedy for '*Shvitra*'. The parameters like number of patches, size of patches, percentage area involved and colour of patches showed statistically highly significant results.

**Key words:** *Shvitra*, vitiligo, *Dhatryadi Ghanavati*.

## INTRODUCTION

All the skin diseases in Ayurveda have been described under the heading of *Kushta*, which are further divided into *Maha Kushta* (major skin disorders) and *Kshudra Kushta* (minor skin disorders).<sup>[1]</sup> However, *Shvitra* has not been counted among these two types. Later on, it has been mentioned as another form of *Kushta* by S ushrua.<sup>[2]</sup> Though, *Shvitra* is mentioned

along with other types of *Kushta*, but the difference between *Shvitra* and *Kushta* is based on non-secretory and non-infectious nature of disease, peculiarity of causative factors, prognosis, chronicity and hereditary history.

According to modern dermatology, *Shvitra* can be correlated with Vitiligo and Leucoderma. There are several diseases marked by a lack of pigment in the skin that is grossly referred to as Leucoderma. Vitiligo is a progressive disease in which the melanocytes are gradually destroyed causing hypopigmented, depigmented or apigmented areas on the skin.<sup>[3]</sup> Vitiligo is a common disorder of unknown etiology even today. Worldwide prevalence of Vitiligo is observed as 1% of the total population.<sup>[4]</sup> Based on dermatological out patient record, it is estimated between 3-4% in India. The cause of vitiligo is unknown but research suggests that it may arise from autoimmune, genetic, oxidative stress, neural or viral. 20 to 30% cases attached as the cause hereditary, 95% of cases are below 40 years.<sup>[5]</sup> In Ayurveda, the

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causes for the *Shvitra* are as untruthfulness, ungratefulness, disrespect for the god, and insult of the preceptors, sinful acts, misdeeds of past lives and intake of incompatible food.<sup>[6]</sup>

In many societies vitiligo has great social importance and in these societies, persons with vitiligo have difficulty in getting married and finding job opportunities. Thus plays a role in social stigma, but this is nothing but the misunderstanding and misbelieves about the disease. Hence the present study is undertaken in order to find out the probable causes of *Shvitra* in today's era and to study their probable mode of action in the pathogenesis of disease.

Due to the chronic nature of disease, long term treatment, lack of uniform effective therapy and unpredictable course of disease is usually very demoralizing for patients. In modern science PUVA (Psoralen + Ultra Violet A rays exposure) therapy and corticosteroids are mainly used for treatment of disease but these therapies have so many harmful side effects. So it is really needed to find a safe, easier, less complicating, cost effective and fruitful approach for the management of disease, and world is expecting some beneficial and useful remedies from the Ayurveda. The formulation '*Dhatryadi Ghanavati*' selected for the study has been described in Chakradatta in the management of *Shvitra*.<sup>[7]</sup> It contains *Amalaki*, *Khadira* and *Bakuchi*. Among these drugs, *Amalaki* and *Bakuchi* have *Kushtaghna* property while *Khadira* is mentioned as *Shvitraghna* and *Kushtaghna*.<sup>[8]</sup> Hence, the drug *Dhatryadi Ghanavati* has been selected for the study. The above formulation is mentioned in the form of *Kwatha* but in this study it was made in the form of *Ghanavati* (tablet) for the sake of convenience.

## OBJECTIVES

To evaluate the efficacy of *Dhatryadi Ghanavati* in the management of *Shvitra* (vitiligo)

## MATERIALS AND METHODS

### Materials

**Patients:** Total 50 patients of *Shvitra* from OPD and

IPD unit of Dr. M.N. Agashe hospital, Satara, were selected irrespective of their sex and religion.

**Drug:** For the present study '*Dhatryadi Ghanavati*' was used for the management of *Shvitra*. The details of the formulation are mentioned in table 1.

**Table 1: Details of *Dhatryadi Ghanavati***

S N	Drug	Latin name	Part used	Quantity
1	<i>Amalaki</i>	<i>Phyllanthus emblica</i>	Phala (fruit)	2 parts
2	<i>Khadira</i>	<i>Acacia catechu</i>	Sara (gum)	2 parts
3	<i>Bakuchi</i>	<i>Psoralea coralifolia</i>	Beeja (seed)	1 part

**Case record form:** A special case Performa including scoring and gradation was prepared for the assessment of the disease and evaluation of efficacy of trial drug. Informed consent was taken from each patient before their enrollment into clinical study.

### Methodology

**Study design:** Single arm open clinical trial

### Method of preparation of *Dhatryadi Ghanavati*

A decoction was prepared by using *Khadira Sara* (1 part) and *Amalaki Phala* (1 part) which was converted into Ghana (solid) form. Then, *Bakuchi* powder (1/2 part) was added to this decoction. After this, *Ghanavati* (tablet) of 500 mg was prepared by using standard method as mentioned in Ayurvedic classics.

### Pharmacognostic and pharmaceutical analysis

Pharmacognostic analysis of all the raw drugs was done in pharmacy. After the preparation of '*Dhatryadi Ghanavati*' it was analyzed for its standardization in pharmacy.

### Criteria for Diagnosis

Patients having *Shvitra* i.e. white patches (depigmentary patches) were selected.

### Inclusion criteria

1. Patients having classical signs and symptoms of *Shvitra* described in Ayurvedic classics without any bar of caste, sex and religion.
2. Patients having chronicity less than 5 years.

3. Patients having age between 16 to 60 years.

#### Exclusion criteria

1. Patients having chronicity more than 5 years.
2. Patients having age less than 16 years and more than 60 years.
3. Patients having all other depigmentary disorders (e.g. albinism).
4. Patients having severe cardiac, renal, hepatic disease, Malignancy, AIDS etc.
5. Patients having patches due to chemical explosion etc.
6. *Shvitra* located at the region of genitalia, sole of palm and feet
7. Pregnant and lactating women.

#### Groups of management

All the selected patients were allocated to single group which were treated by *Dhatryadi Ghanavati*. The details of drug administration are mentioned in table 2.

**Table 2: Details of drug administration**

Drug	<i>Dhatryadi Ghanavati</i>
Form of drug	<i>Ghanavati</i> (tablet)
Dose	2 tablets (each of 500 mg) B.D.
<i>Anupana</i>	<i>Koshna Jala</i> (Lukewarm water)
<i>Sevana kala</i>	<i>Nirannakala</i> (empty stomach) 7.00 a.m. and 7.00 p.m.
Duration	3 months
Follow up	Every week and whenever needed
Diet	As per <i>Pathyakara Ahara</i> mentioned in Ayurvedic classics
<i>Vihara</i>	Daily half hour exposure to sunlight

#### Criteria for Assessment: <sup>[9]</sup>

The scoring and gradation pattern for the assessment of signs and symptoms is as follows;

#### 1. *Rukshata* (dryness)

Scale	Score
No line on scrubbing with nail	0

Faint line on scrubbing by nails	1
Lining and even words can be written on scrubbing by nail	2
Excessive <i>Rukshata</i> leading to <i>Kandu</i>	3
<i>Rukshata</i> leading to crack formation	4

#### 2. *Daha* (burning sensation)

Scale	Score
No <i>Daha</i>	0
Mild <i>Daha</i>	1
Moderate <i>Daha</i>	2
Severe <i>Daha</i>	3
Severe <i>Daha</i> affecting sleep	4

#### 3. *Kandu* (itching)

Scale	Score
No itching	0
Mild / Occasional itching	1
Moderate (tolerable) infrequent	2
Severe itching frequently	3
Very severe itching disturbing sleep and other activities	4

#### 4. Number of Patches

Number of patches	Score
None	0
1-3	1
4-6	2
7-10	3
More than 10	4

#### 5. Size of Patches

Size of patches	Score
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None	0
Less than 5 cm	1
5 cm – 10 cm	2
10 cm – 15 cm	3
More than 15 cm	4

#### 6. Percentage of area involved

Percentage of area involved	Score
None	0
0-10%	1
11-25%	2
26-50%	3
More than 50%	4

#### 7. Color of Patches

Color of patches	Score
Normal skin color	0
Re-pigmentation	1
Reddish	2
Dull white	3
White	4

#### 8. Hair discoloration within patch

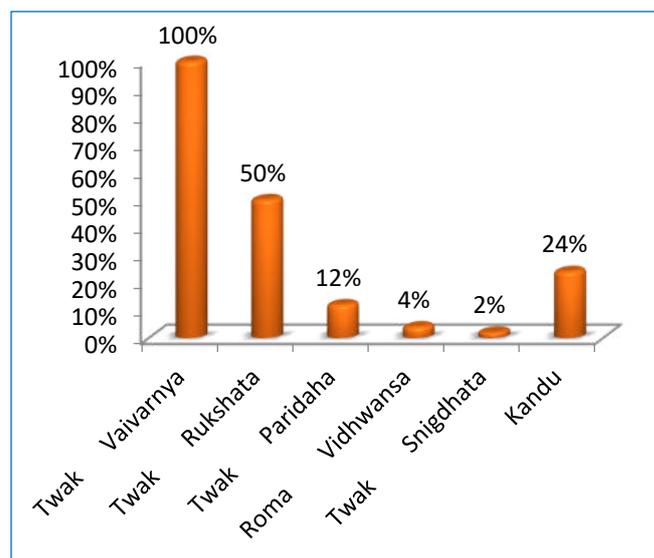
Hair discoloration	Score
Normal hair with normal color	0
Red hair	1
Reddish white hair	2
White hair	3
Total loss of hair	4

### OBSERVATIONS

In the present study 32% patients were from the age group of 31 to 40 years. Females were 58%, 48%

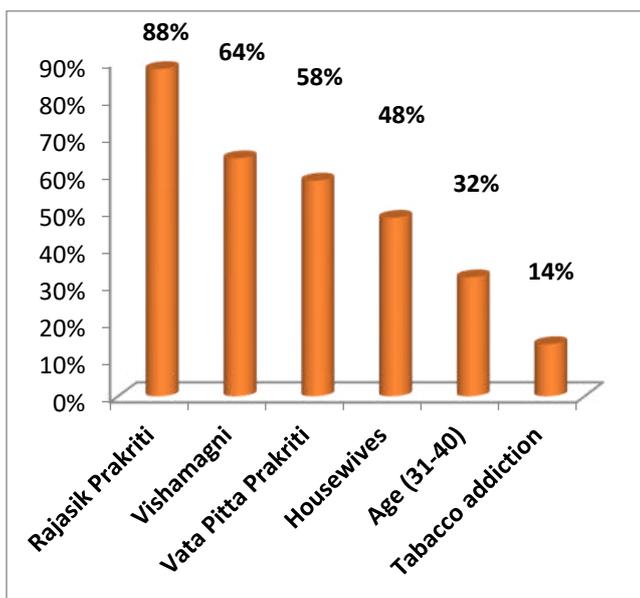
patients were housewife. Socio-economically 64% patients were from lower middle class. 84% patients were habituated to mixed (Vegetarian and non-vegetarian) type of diet. *Twak Vaivarnya* (skin discolouration) was present in all the patients. 50 % patients were having *Twak Rukshata* (dryness) whereas *Kandu* (itching) was present in 24% patients. 44% patients were having *Alpa Swedapravritti* (less sweating). *Purvarupa* (prodromal symptoms) of *Shvitra* were *Avyakta* (unmanifested) in 66% patients. 44% patients were having the disease chronicity less than one year, the onset of disease was found gradual in 56% patients. 54% patients had not taken any kind of treatment before enrollment in the present study. Family history was found positive in 6% patients. (chart 1)

**Chart 1: Chief complaints of the disease in 50 patients of *Shvitra*.**



Among the patients of *Shvitra* 58% were having dominance of *Vata-Pitta* in *Sharira Prakriti* whereas *Rajasik Prakriti* was found in 88% patients. 64% patients were having *Vishamagni* (irregular digestive fire) while *Koshta* (bowel nature) was *Madhyam* in 84% patients. 40% patients were having *Avara Satmya* (poor suitability). 32% patients were having *Avara Jaranashakti* (poor digestive capacity). Tobacco addiction was found in 14% patients. Disturbed sleep was found in 48% patients, 34% patients were having stressful job environment. 64% patients were not doing any kind of *Vyayama* (exercise). (chart 2)

Chart 2: General observations in 50 patients of Shvitra.



RESULTS

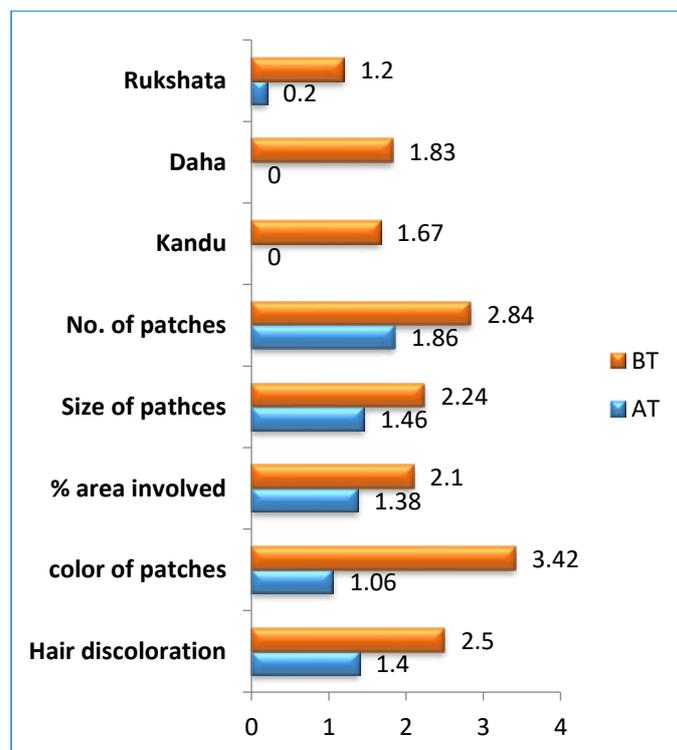
100% relief was observed in *Daha* and *Kandu* followed by 83.33% relief was observed in *Rukshata*. 34.51% improvement was seen in number of patches, 34.82% in size of patches and 34.29% in percentage area involved. Color of the patches was improved by 69.01% whereas 44% improvement was seen in hair discoloration. Statistically the parameters like *Rukshata*, *Kandu*, number of patches, size of patches, percentage area involved and color of patches showed highly significant results whereas the parameters *Daha* and hair discoloration showed insignificant results. (table 3)

Table 3: Showing the results of Dhatriyadi Ghanavati on various parameters of Shvitra (paired t test)

Parameter	Mean score		Mean Diff.	% relief	S. D.	SE M	t	P
	BT	AT						
<i>Rukshata</i> n=25	1.2	0.2	1.00	83.33%	0.50	0.10	10.00	P<0.001
<i>Daha</i> n=6	1.8	0.0	1.83	100%	0.75	0.31	5.97	P>0.05
<i>Kandu</i>	1.6	0.0	1.67	100%	0.4	0.1	11.	P<0.00

n=12	7	0		%	9	4	73	1
No. of patches n=50	2.8	1.8	0.98	34.51%	1.1	0.1	5.8	P<0.001
Size of patches n=50	2.2	1.4	0.78	34.82%	0.7	0.1	7.4	P<0.001
% area involved n=50	2.1	1.3	0.72	34.29%	0.6	0.0	8.3	P<0.001
Color of patches	3.4	1.0	2.36	69.01%	1.1	0.1	14.66	P<0.001
Hair discoloration n=10	2.5	1.4	1.10	44%	1.2	0.3	2.9	P>0.05

Chart 3: Results of Dhatriyadi Ghanavati on various parameters of Shvitra



DISCUSSION

Ayurvedic texts have told *Shvitra* as *Pittapradhana Tridoshaja Vyadhi*. This might be the reason that the disease was more prevalent in age group (31-40 years) which is *Pitta Pradhana*.<sup>[10]</sup> The more number of females may be due to the fact that females are

more cautious about cosmetic values. Females especially housewives, spends most of the hours in kitchen i.e. hot environment which indeed becomes a cause known as 'Atapasevan' (exposure to heat) according to Ayurveda. The disease *Shvitra* does not vary as such in different socio-economic classes but, the hospital from which the patients are selected, being a government hospital is mostly visited by the middle class and lower middle class people.

*Twak Vaivarnya* being the cardinal symptom of the disease, present in all the patients. *Shvitra* is a *Tridoshaja Vyadhi*, hence presence of all three *Doshas* can be elicited. Among the symptoms, *Rukshata* indicates the dominance of *Vata Dosh*, *Daha* is due to the dominance of *Pitta* and *Kandu* is due to the dominance of *Kapha Dosh*.

Gradual onset is generally observed in natural occurring or primary *Shvitra* which is manifested by independent causes. The other type of *Shvitra* caused by secondary factors like burn, scabies, eczema etc. have sudden onset as compare to former. Most of the patients were not taking any medication before enrollment; it is due to the fact that most of the patients were diagnosed accidentally. Moreover, since the disease is considered as a social stigma, patients tries to hide it when it is located at unexposed part of the body and don't prefer any medicine until it gets exposed. Vitiligo has a polygenic or autosomal dominant inheritance pattern with incomplete penetrance and variable expression.<sup>[11]</sup> Familial occurrence has been reported to be in the range of 6.3% to 30%.<sup>[12]</sup>

*Prakriti* as such has no direct role in the formation of disease but it is a certain fact that person of particular *Prakriti* is always susceptible for manifestation of particular kind of disease.<sup>[13]</sup> In present study most of the patients were of *Vata-pitta* dominant *Prakriti*. *Rajas Prakriti* persons are mostly involved in emotional imbalance and hence have a tendency for the development of the disease. *Agni* is the major factor according to Ayurveda responsible for digestion, health, complexion, and strength etc.<sup>[14]</sup> Impairment or irregularity in the functioning of *Agni* is said to be the root cause of every disease.<sup>[15]</sup> In case

of *Vishamagni* (irregular digestive fire) it is said that sometimes it digests the food properly and sometimes not causing the irregularity in digestion process.<sup>[16]</sup> This irregularity may work as the reason for disturbances in *Dhatu Utpatti* (body tissue formation) and simultaneously producing *Ama* (poisonous substance) and *Kleda* (moistness) in the body which makes the body susceptible for skin disorders such as *Shvitra*. A person not doing any *Vyayama* will have 'Shaithilya' (looseness) in his *Dhatu* (body tissue) which is an important stage in the formation of *Kushta* according to Ayurveda.<sup>[17]</sup> Whenever such persons consume faulty diet, the vitiated *Doshas* gets located in those *Dhatu* resulting in skin diseases.

#### Discussion on results

It has been reported that *Bakuchi* has the effect on Ronget's cell and melanoblast cells of skin. It stimulates melanocytes for the production of melanin. *Bakuchi* contain several types of Furocaumarins precursors such as psoralin. Furocaumarins are primary photodynamic agents. They absorb long wave ultraviolet radiations after exposure to sun light and become photoactive.<sup>[18]</sup> These photoactive furocaumarins cause cell damage of the depigmented skin by inhibiting DNA synthesis, and stimulate tyrosinase activity and regrowth of melanocytes from the hair follicles. Thus furocaumarins cause dual action i.e. removal of depigmented skin and formation of normal colored skin.

*Bakuchi* is the drug of choice in disease *Shvitra*, but due to its *Ushna Guna* it can lead to itching and burning at times. In current formulation, along with *Bakuchi* there are other two drugs like *Khadira* and *Amalaki* having *Sheeta Veerya* which nullifies the side effect of *Bakuchi*. Beside this, *Amalaki* due to *Rasayana*<sup>[19]</sup> potency helps in cell regeneration. Charaka has advised to use '*Khadira*' as *Anupana* with all formulations in the treatment of *Kushta*. Hence, all these three drugs act in synergism on *Shvitra*. Another thing is that '*Khadira Katha*' is made from the *Anta twak* (internal bark) of *Khadira*. According to 'rule of signature' (*Samanya Sidhhanta-Samanen Samanasya Vriddhi*) it will act on the skin of human beings for regeneration of cells especially on stratum spinosum

and stratum germinativum. All the patients were advised to sit in early morning sunlight after drug intake. According to modern science also UV radiation is very necessary for the synthesis of melanin. Melanin is a type of protein which is synthesized from amino acid named tyrosine. When tyrosinase enzyme act on tyrosine in presence of sunlight and copper ion, then melanosomes are formed and by mitotic division of melanosomes, melanin is formed. This melanin is received by keratinocytes arranged in between keratic cells to give the natural colour to skin.

### CONCLUSION

The compound formulation '*Dhatryadi Ghanavati*' is found as an effective remedy for '*Shvitra*'. The parameters like number of patches, size of patches, percentage area involved and colour of patches showed statistically highly significant results. Among all the patients, those who regularly sat in early morning sunlight and those who avoided the intake of *Amla Rasa* achieved re-pigmentary stage earlier than others. Relapsing nature of the disease was observed in few cases after the cessation of trial drug; hence long term therapy is required for the complete remission of the disease. The drug '*Dhatryadi Ghanavati*' doesn't showed any adverse reaction and hence can be considered as safe.

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