



# Understanding Chikitsa Siddhanta WSR To Managing Hyperpigmentation by applying Shalmalikantaka(Bombaxceiba )

Dr Bishnupriya Mohanty<sup>1</sup>, Sweety Suresh Mandrekar<sup>2</sup>, Pr(Dr) Sangram Keshari Das<sup>3</sup>

<sup>1</sup>MD, PhD, Professor & Head, Department of Sanskrit Samhita and Siddhanta

<sup>2</sup>IV B.A.M.S. Student.

<sup>3</sup>Professor & Head, Dept. of Dravyaguna Vijnana, Gomantak Ayurveda Mahavidyalaya & Research Centre, At/Po- Shiroda, Dist- North Goa, Goa, India-403103

**ABSTRACT:** Hyperpigmentation, characterized by the excessive deposition of melanin in the skin, presents both cosmetic and psychological concerns. Ayurvedic medicine offers a holistic approach to skin health, and Bombax ceiba (Silk Cotton Tree), known as “Shalmali” in Ayurveda, is traditionally used for treating various skin disorders. This paper explores its ethnomedicinal use, phytochemistry, and the available pharmacological data supporting its application in managing hyperpigmentation.

**KEYWORDS:** Bombax ceiba, hyperpigmentation, Ayurveda, antioxidant, skin healing, melanin regulation

## INTRODUCTION

Hyperpigmentation involves an overproduction of melanin, often due to inflammation, sun exposure, hormonal changes, or post-acne scarring. Ayurveda views skin discoloration (Vyanga) as an imbalance of doshas—primarily Pitta and Vata. Traditional herbal therapies aim to restore doshic equilibrium and rejuvenate the skin. Bombax ceiba is highlighted in classical Ayurvedic texts for its cooling, pitta-pacifying, and wound-healing properties.

## 2. Traditional Ayurvedic Use

- In Ayurvedic medicine, Bombax ceiba is used topically in formulations for treating skin blemishes, wounds, acne scars, and pigmentation. The paste of its thorns is particularly prescribed for dark spots and hyperpigmented lesions. Classical texts like Bhavaprakasha Nighantu list its utility in skin rejuvenation and blood purification.

## 3. Phytochemical Composition

Bombax ceiba contains:

Flavonoids (quercetin, kaempferol), Phenolics, Tannins, Alkaloids and Glycosides.

These bioactive compounds exhibit antioxidant, anti-inflammatory, and skin regenerative properties, making them suitable for pigmentation control.

## 4. Pharmacological Evidence

**Recent pharmacological studies suggest:**

**Antioxidant Activity:** The methanolic extract of the stem bark shows strong free radical scavenging potential, potentially protecting melanocytes from oxidative stress-induced hyperpigmentation.

**Anti-inflammatory Effects:** These help reduce post-inflammatory hyperpigmentation and soothe irritated skin.

Wound Healing & Regeneration: Animal studies show faster wound closure and re-epithelialization with topical *Bombax ceiba* extract, suggesting a potential for skin tone restoration and scar lightening. Although direct human clinical trials on hyperpigmentation are limited, a cosmetic formulation study involving *Bombax ceiba* flower extract showed improved skin hydration and wrinkle reduction, which may indirectly aid skin clarity.

### 5. Mechanism of Action (Proposed)

- Inhibition of melanin synthesis via antioxidant activity
  - Downregulation of tyrosinase enzyme (to be further studied)
  - Skin regeneration and scar fading via fibroblast stimulation
- Analytical Report on Dermatological Effects of Shalmali Katak Application

#### 1. Introduction:

Shalmali Katak (thorns of *Salmalia malabarica*) is a well-known herb in Ayurvedic pharmacopoeia, traditionally employed for its exfoliating, wound-healing, and anti-inflammatory properties. Its utility in managing various dermatological conditions has been highlighted in classical texts, but empirical analysis of its dermatological effects remains limited. This report presents an observational study evaluating cutaneous changes following topical application of Shalmali Katak-based formulation over a defined period.

#### 2. Objective:

To systematically observe and analyze the dermatological changes in human skin after the topical application of a formulation containing Shalmali Katak over a 4-week period.

#### 3. Methodology:

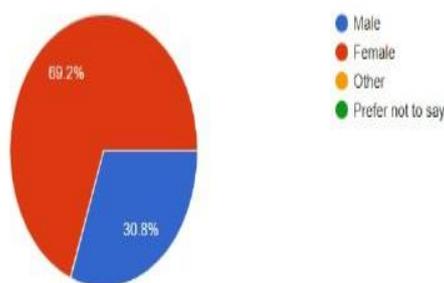
**Formulation:** A paste prepared using powdered Shalmali Katak combined with a suitable base (e.g., rose water, aloe vera gel).

**Participants:** 10 individuals aged 20–35 years with varying skin types and common skin concerns (e.g., acne, dryness, pigmentation).

**Application:** Daily topical application on the face, once in a day for 4 weeks.

**Observation Points:** Weekly evaluations using visual assessment, participant feedback, and clinical observation.

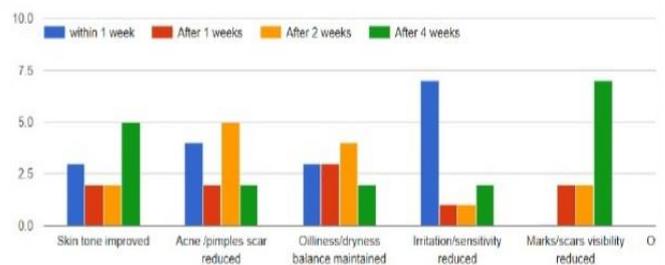
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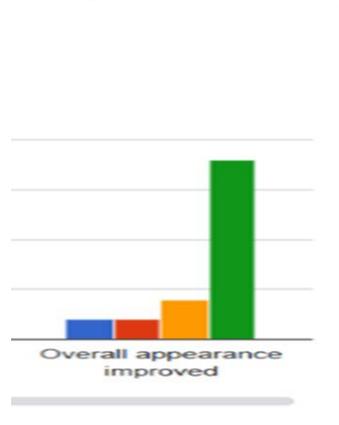
Section 2: parameter evaluation (1-5)

Copy chart

Please rate the following skin parameters on scale of 1 (poor/worse) to 5 (excellent).



#### 4. Observational Data: Skin Parameter Analysis



This bar chart represents a parameter evaluation of a skincare product over different time periods: within 1 week, after 1 week, after 2 weeks, and after 4 weeks. The parameters are rated on a scale of 1 (poor/worse) to 5 (excellent). Here's a breakdown and review of the chart:

##### Observations by Parameter:

###### 1. Skin tone improved:

Moderate improvement in all timeframes.

Highest rating observed after 4 weeks.

###### 2. Acne/pimples scar reduced:

Shows consistent improvement over time.

Peak effectiveness observed after 2 weeks.

###### 3. Oiliness/dryness balance maintained:

Gradual improvement over time.

Best result seen after 2 weeks, with a small drop at 4 weeks.

###### 4. Irritation/sensitivity reduced:

Major improvement within 1 week (highest rating among all parameters and timeframes).

Significant drop after that, suggesting immediate but not sustained relief.

###### 5. Marks/scars visibility reduced:

Slight gains in the first three time periods.

Sharp rise after 4 weeks, indicating long-term benefits.



##### Review Summary:

Quick Relief: Irritation/sensitivity reduction is most effective within 1 week.

Long-Term Benefits: Skin tone improvement and marks/scars reduction show best results after 4 weeks.

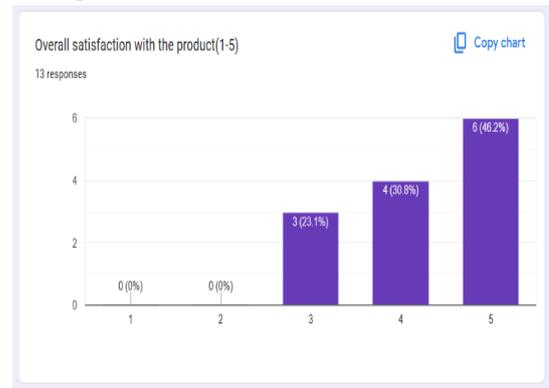
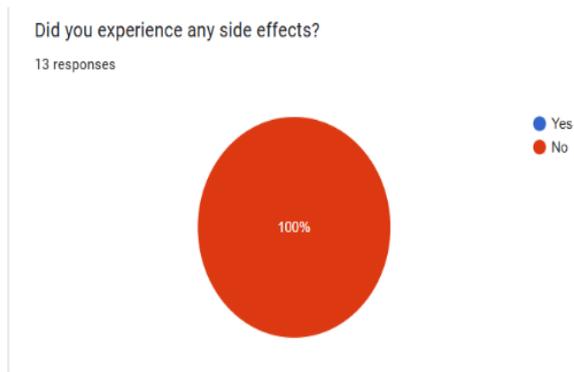
Mid-Term Effectiveness: Acne scar reduction and oiliness/dryness balance peak around 2 weeks.

**Suggestion:**

The product seems to work well for irritation relief quickly.

Best results for visible improvements (tone, scars) are seen with consistent use over several weeks.

Tracking individual parameter progress might help in customizing skincare routines.



This pie chart answers the question “Did you experience any side effects?” based on 13 responses.

**Key Insight:**

100% of respondents selected "No", indicating that none of the participants experienced any side effects from the product.

**Review Summary:**

Excellent safety profile — complete absence of reported side effects suggests the product is well-tolerated. This result supports the positive findings in the previous skin parameter evaluation, strengthening overall confidence in the product’s effectiveness and safety.

This bar chart reflects overall satisfaction with the product, rated on a scale from 1 (poor) to 5 (excellent), based on 13 responses.

**Key Insights:**

0% gave a score of 1 or 2, meaning no one was dissatisfied.

23.1% rated it 3, indicating moderate satisfaction.

30.8% rated it 4, showing good satisfaction.

46.2% rated it 5, meaning nearly half of the users were highly satisfied.

**Review Summary:**

The product received strong positive feedback, with over 75% rating it 4 or 5.

Combined with the zero side effects and progressive improvement in skin parameters, this suggests a highly effective and well-received skincare product. The absence of low ratings (1 or 2) reinforces its consistency and reliability in user experience.

Key Themes from Responses:

1. Fast-acting results:

“Within a week I got the visible effects on my skin.”

2. Improved skin texture:

“My skin got smooth after using it.”

3. Even skin tone & brightening:

“Lighter in shade. And even skin.”

4. Reduced inflammation and sensitivity:

“Inflammation reduced”

“Hyper pigmentation reduced significantly along with reduction in sensitivity.”

5. Positive but general feedback:

“Good”

“Yes”

6. No noticeable change:

“No” (only one response)

### **Review Summary:**

Majority of users reported noticeable positive changes, such as smoother texture, brighter and even-toned skin, and reduced inflammation/sensitivity.

Only one user indicated no visible improvement.

Feedback complements the quantitative data — affirming the product's efficacy and satisfaction.

### **5. Conclusion:**

The 4-week observational study suggests that Shalmali Katak possesses beneficial dermatological properties, including enhancement of skin texture, tone, acne reduction, and improvement in overall appearance. These effects affirm its traditional Ayurvedic usage and indicate its potential for inclusion in modern herbal dermatological formulations.

### **6. Recommendations for Further Study**

Controlled clinical trials with larger sample size.

Biochemical analysis of active constituents.

Long-term efficacy and safety profiling.

## **6. CONCLUSION**

Bombax ceiba presents a promising herbal approach for the treatment of hyperpigmentation, aligning with Ayurvedic doctrines and supported by initial pharmacological data. Its antioxidant and regenerative properties could help normalize melanin production and improve skin tone. However, clinical studies focused explicitly on hyperpigmentation are warranted to validate its efficacy

Ayurvedic references supporting the traditional use of Bombax ceiba (Shalmali) for skin-related disorders, including hyperpigmentation.

## **REFERENCES**

### **1. Bhavaprakasha Nighantu (Bh.P.N.) – GuduchyadiVarga:**

Shalmali is described as having Sheeta (cooling), Kashaya (astringent), and Ropana (healing) properties. It is used in Varnya (complexion-enhancing) and RaktaShodhaka (blood-purifying) formulations.

Its bark and thorn paste are applied externally for Twakvikara (skin disorders), including Vyanga (facial hyperpigmentation or dark patches).

### **2. Charaka Samhita (CikitsaSthana):**

In management of Kushta (skin diseases), herbs with cooling and anti-inflammatory properties like Shalmali are used to pacify Pitta and Rakta Dushti (vitiated blood).

### **3. Sushruta Samhita (ChikitsaSthana, 20/30-40):**

Mentions external applications for discoloration and scars using plant pastes (Lepa) made from bark and thorns of skin-healing herbs like Shalmali.

**4. Ayurvedic Indications (from Nighantus):**

Shalmali Lepa (paste): Traditionally prepared from thorns for Vyanga (facial hyperpigmentation), applied externally to lighten blemishes and restore skin tone.

ShalmaliPanchangaChurna: A powdered mix of all parts of the tree, sometimes used internally for blood purification, indirectly benefiting skin health.