

# Ayurvedic Cosmeceuticals in Brihatrayi A Comprehensive Review of Varnya Dravya and Their Dermatological Applications

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**Abstract**—Ayurveda, the ancient Indian system of medicine, places significant emphasis on varṇa (complexion, lustre, and healthy appearance of the skin) as an external indicator of internal health and tissue equilibrium. The Bṛhat-trayī Charaka Saṃhitā, Suśruta Saṃhitā, and Aṣṭāṅga Hṛdaya systematically describe a group of drugs known as Varnya dravya, which are indicated for enhancing skin complexion, radiance, and overall dermatological health. In recent decades, there has been renewed global interest in Ayurvedic cosmeceuticals due to their holistic approach, botanical origin, and perceived safety. Modern dermatological science recognizes many of these classical Varnya herbs for their antioxidant, anti-inflammatory, antimicrobial, wound-healing, and melanogenesis-modulating properties. This review critically analyzes the concept of Varnya as described in the Bṛhat-trayī, enumerates important Varnya dravya, correlates classical attributes (rasa, guṇa, vīrya, vipāka, karma) with modern phytochemical and pharmacological findings, and discusses their dermatological applications in contemporary cosmeceutical science. Challenges in standardization, formulation, safety evaluation, and regulatory approval are also addressed. The review aims to bridge classical Ayurvedic wisdom with modern dermatological research, providing a scientific foundation for the rational development of Ayurvedic cosmeceuticals.

**Index Terms**—Varnya dravya, Brihatrayi, Ayurvedic cosmeceuticals, dermatology, complexion, skin health.

## I. INTRODUCTION

Skin is the largest organ of the human body and serves as a protective barrier, sensory interface, and indicator of systemic health. Across cultures, healthy, radiant skin has been associated with beauty, vitality, and well-being. In Ayurveda, skin health is not viewed in isolation but as a reflection of balanced doṣa, proper dhātu nourishment, efficient agni, and unobstructed srotas.<sup>1</sup>

The classical Ayurvedic texts of the Bṛhat-trayī provide elaborate descriptions of skin anatomy (tvacā), physiology, pathology, and therapeutics. Among the various therapeutic classifications, Varnya dravya occupy a special place. These substances are specifically indicated to enhance varṇa, which encompasses complexion, glow, clarity, and uniformity of the skin.<sup>2</sup>

In the contemporary era, the concept of cosmeceuticals—cosmetic products with biologically active ingredients that provide medical or drug-like benefits—has gained prominence. Many Ayurvedic herbs traditionally used for skin care fit well into this category. Unlike synthetic cosmetic agents that may offer rapid results with potential adverse effects, Ayurvedic cosmeceuticals aim to restore physiological balance and promote long-term skin health.<sup>3</sup>

This review explores Varnya dravya from classical and modern perspectives, highlighting their relevance

in present-day dermatology and cosmeceutical research.

## II. CONCEPT OF VARṆA AND VARNYA IN AYURVEDA<sup>4, 5</sup>

### 2.1 Meaning of Varṇa

The term varṇa in Ayurveda signifies more than mere skin color. It denotes:

- Natural complexion
  - Skin radiance and lustre (prabhā)
  - Even tone and clarity
  - Absence of discoloration, blemishes, and disease
- Charaka states that varṇa is influenced by rasa and rakta dhātu, while Suśruta emphasizes the role of pitta and bhrajaka pitta localized in the skin.

### 2.2 Factors Affecting Varṇa

According to the Br̥hat-trayī, varṇa is influenced by:

- Doṣa balance (especially pitta)
- Quality of rakta dhātu
- Digestive fire (jatharāgni)
- Mental state (sattva)
- Diet (āhāra) and lifestyle (vihāra)
- External applications (lepa, abhyanga)

## III. VARNYA DRAVYA IN THE BR̥HAT-TRAYĪ<sup>6, 7</sup>

### 3.1 Varnya Mahākāṣāya (Charaka Saṃhitā)

Charaka Saṃhitā enumerates Varnya Mahākāṣāya, a group of ten herbs primarily indicated for enhancing complexion:

1. Chandana (*Santalum album*)
2. Tunga (*Calophyllum inophyllum*)
3. Padmaka (*Prunus cerasoides*)
4. Uśīra (*Vetiveria zizanioides*)
5. Madhuka (*Glycyrrhiza glabra*)
6. Mañjiṣṭhā (*Rubia cordifolia*)
7. Sārivā (*Hemidesmus indicus*)
8. Payasyā (*Ipomoea digitata*)
9. Śītā (*Cynodon dactylon*)
10. Latā (*Cynodon dactylon*)

These drugs are predominantly śīta vīrya, madhura/tikta rasa, and pitta-śāmaka.

### 3.2 Description in Suśruta Saṃhitā

Suśruta discusses Varnya drugs in the context of:

- Kuṣṭha

- Vyanga
- Nīlikā
- Mukhadūṣikā

External therapies such as lepa, pradeha, and abhyanga using Varnya dravya are emphasized.

### 3.3 Aṣṭāṅga Hṛdaya Perspective

Vāgbhaṭa integrates the teachings of Charaka and Suśruta and provides practical formulations such as:

- Kumkumādi Taila
- Varnya lepa
- Raktaśodhana-based skin therapies

## IV. PHARMACODYNAMIC ATTRIBUTES OF VARNYA DRAVYA<sup>8, 9</sup>

### 4.1 Rasa (Taste)

Predominantly madhura, tikta, and kaṣāya associated with nourishment, detoxification, and skin clarity.

### 4.2 Guṇa (Qualities)

Laghu, snigdha, and ślakṣṇa—facilitating absorption and softness of skin.

### 4.3 Vīrya (Potency)

Mostly śīta vīrya, helping pacify pitta-related discoloration and inflammation.

### 4.4 Vipāka

Madhura vipāka promotes tissue nourishment and regeneration.

### 4.5 Karma

- Raktaśodhana
- Tvacya
- Kuṣṭhaghna
- Vraṇaropaka
- Dāhapraśamana

## V. IMPORTANT VARNYA DRAVYA AND THEIR DERMATOLOGICAL SIGNIFICANCE<sup>10, 11, 12</sup>

### 5.1 Mañjiṣṭhā (*Rubia cordifolia*)

- Classical action: Raktaśodhana, Varnya
- Modern findings: Antioxidant, anti-inflammatory, wound-healing, anti-pigmentary
- Applications: Acne scars, hyperpigmentation, chronic wounds

## 5.2 Haridrā (Curcuma longa)

- Classical action: Kuṣṭhaghna, Kṛmighna
- Modern findings: Curcumin inhibits NF-κB, COX-2
- Applications: Acne, dermatitis, wound healing

## 5.3 Chandana (Santalum album)

- Classical action: Dāhpraśamana, Varnya
- Modern findings: Antimicrobial, soothing, anti-inflammatory
- Applications: Acne, erythema, photoaging

## 5.4 Yaṣṭimadhu (Glycyrrhiza glabra)

- Classical action: Tvacya, Varnya
- Modern findings: Skin lightening, anti-inflammatory
- Applications: Melasma, eczema, sensitive skin

## 5.5 Sārivā (Hemidesmus indicus)

- Classical action: Raktaśodhana
- Modern findings: Antioxidant, detoxifying
- Applications: Chronic skin disorders

## VI. AYURVEDIC COSMECEUTICAL FORMULATIONS

6.1 Classical Formulations<sup>13, 14</sup>

- Kumkumādi Taila
- Mañjiṣṭhādi Ghṛta
- Varnya Lepa
- Elādi Taila

## 6.2 Modern Dosage Forms

- Creams and gels
- Nanoemulsions
- Phytosomes
- Herbal face serums and masks

## VII. DERMATOLOGICAL APPLICATIONS OF VARNYA DRAVYA<sup>15</sup>

Condition	Ayurvedic Correlation	Therapeutic Role
Acne	Mukhadūṣikā	Anti-inflammatory, antimicrobial
Melasma	Vyanga	Tyrosinase inhibition
Eczema	Vicarikā	Barrier repair
Wounds	Vraṇa	Tissue regeneration
Photoaging	Pitta vridhhi	Antioxidant protection

## VIII. DISCUSSION

The present review elucidates the classical concept of Varnya dravya as described in the Bṛhat-trayī and critically examines its relevance in contemporary dermatological and cosmeceutical science. The analysis demonstrates a striking convergence between Ayurvedic principles of skin health and modern scientific understanding of cutaneous physiology and pathology. While Ayurveda conceptualizes skin health through the balance of doṣa, dhātu, agni, and srotas, modern dermatology emphasizes inflammation, oxidative stress, barrier integrity, microbial homeostasis, and melanocyte regulation. These paradigms, though linguistically distinct, converge mechanistically.<sup>16</sup>

### 8.1 Integration of Classical Concepts with Modern Dermatology

In Ayurveda, varṇa is not merely pigmentation but an expression of systemic health, reflecting the functional status of rasa and rakta dhātu and the equilibrium of bhrajaka pitta. This holistic understanding parallels modern insights wherein skin appearance is influenced by vascular health, inflammatory mediators, oxidative balance, and immune regulation. Disorders such as vyanga, nīlikā, and mukhadūṣikā described in classical texts show clinical similarity to melasma, post-inflammatory hyperpigmentation, acne vulgaris, and acne scars.<sup>17</sup>

The Varnya group of drugs is predominantly śīta vīrya, madhura-tikta rasa, and pitta-sāmaka, indicating their utility in inflammatory and pigmentary disorders. Modern studies corroborate this by demonstrating anti-inflammatory cytokine modulation, inhibition of reactive oxygen species, and downregulation of melanogenesis-related enzymes such as tyrosinase. This parallelism reinforces the scientific validity of classical drug classification and therapeutic logic.<sup>18</sup>

### 8.2 Pharmacological Basis of Varnya Action

From a pharmacological standpoint, the dermatological actions of Varnya dravya can be categorized into five major mechanisms:

1. Antioxidant activity – Many Varnya herbs such as Mañjiṣṭhā, Haridrā, and Sārivā are rich in phenolic compounds and flavonoids. These compounds neutralize free radicals, preventing lipid peroxidation and collagen degradation,

which are key contributors to photoaging and skin dullness.<sup>19</sup>

2. Anti-inflammatory effects – Inflammation is a central pathophysiological process in acne, eczema, psoriasis, and pigmentation disorders. Curcuminoids, santalols, and glycyrrhizin inhibit pro-inflammatory mediators like TNF- $\alpha$ , IL-6, and COX-2, corresponding to the Ayurvedic concept of pitta śamana and dāhapaśamana.<sup>20</sup>
3. Raktaśodhana and detoxification – The Ayurvedic concept of rakta śuddhi finds a modern parallel in hepatoprotective, immunomodulatory, and microcirculation-enhancing activities of herbs like Mañjiṣṭhā and Sārivā. Improved microvascular circulation and reduced systemic inflammation indirectly improve skin tone and texture.<sup>21</sup>
4. Wound healing and tissue regeneration – Classical indications of Varnya dravya in vraṇa correlate with modern evidence of enhanced fibroblast proliferation, collagen synthesis, angiogenesis, and epithelialization. This justifies their application in acne scars, chronic ulcers, and post-procedure skin repair.<sup>22</sup>
5. Melanogenesis modulation – Although classical texts do not explicitly describe biochemical pathways, the therapeutic indication of Varnya drugs in discoloration disorders suggests melanocyte regulation. Modern in-vitro and in-vivo studies indicate tyrosinase inhibition and reduced melanin synthesis by certain Ayurvedic herbs, supporting their use in hyperpigmentation and melasma.<sup>23</sup>

### 8.3 Relevance of External Applications

Ayurveda places strong emphasis on bāhya cikitsā (external therapy) for skin disorders. Lepa, pradeha, abhyanga, and udvartana ensure direct drug delivery to the skin, akin to modern topical formulations. Contemporary cosmeceutical science similarly favors topical delivery to maximize local effects while minimizing systemic exposure.<sup>24</sup>

The classical use of lipid-based carriers such as taila and ghṛta is particularly noteworthy. Modern research has established that lipid-rich vehicles enhance dermal penetration, improve skin barrier repair, and increase drug bioavailability principles now exploited in nanoemulsions and liposomal systems. Thus,

Ayurvedic pharmaceuticals demonstrates a sophisticated understanding of transdermal drug delivery long before modern formulation science.<sup>25</sup>

### 8.4 Limitations of Existing Evidence

Despite promising pharmacological and preliminary clinical findings, several limitations impede the widespread acceptance of Ayurvedic cosmeceuticals:

- Lack of large-scale randomized controlled trials with standardized formulations and validated dermatological outcome measures.
- Variability in botanical identity and phytochemical content due to geographical, seasonal, and processing differences.
- Insufficient safety and toxicological profiling, especially for long-term topical use.
- Regulatory challenges, as cosmeceuticals occupy a grey zone between cosmetics and drugs.

These limitations highlight the need for methodologically robust, interdisciplinary research that respects classical Ayurvedic principles while adhering to modern scientific standards.

### 8.5 Scope for Integrative Dermatology

The concept of integrative dermatology combining Ayurveda with modern dermatological care holds immense promise. Varnya dravya can serve as adjuncts to conventional therapies, reducing dependence on corticosteroids, hydroquinone, and synthetic retinoids, which are associated with adverse effects. Personalized Ayurvedic assessment based on prakṛti and doṣastatus can further refine cosmeceutical selection, aligning with the modern trend toward personalized skincare.<sup>27</sup>

## IX. CONCLUSION

The review comprehensively establishes that Varnya dravya described in the Bṛhat-trayī constitute a scientifically plausible and clinically relevant group of botanicals for dermatological and cosmeceutical applications. Ayurveda's holistic understanding of skin health integrating systemic physiology, mental well-being, and external care offers a broader therapeutic framework than conventional cosmetic approaches focused solely on surface aesthetics. The pharmacodynamic attributes of Varnya dravya, including raktaśodhana, pitta śamana, anti-

inflammatory, antioxidant, wound-healing, and melanogenesis-modulating actions, are increasingly supported by modern experimental and clinical research. Classical formulations and topical applications demonstrate rational pharmaceutical design that aligns closely with contemporary principles of dermal drug delivery.

However, to fully realize the potential of Ayurvedic cosmeceuticals, there is an urgent need for:

- Standardized raw materials and formulations
- Rigorous safety and efficacy evaluation
- Well-designed clinical trials with dermatologically relevant endpoints
- Regulatory clarity and quality assurance

With such scientific validation and innovation, Varnya dravya can transcend their traditional boundaries and emerge as evidence-based, globally acceptable cosmeceuticals. Their integration into modern dermatology not only enriches therapeutic options but also promotes a sustainable, holistic, and patient-centered approach to skin health. In conclusion, the wisdom of the Bṛhat-trayī, when interpreted through the lens of modern science, holds substantial promise for the future of dermatological therapeutics and cosmeceutical development. Varnya dravya exemplify how classical Ayurvedic knowledge can inform and inspire contemporary evidence-based skincare solutions.

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