



## ROLE OF RASA DHATU AND RASAYANA THERAPY IN MAINTAINING SKIN HEALTH: AN AYURVEDIC REVIEW

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### ABSTRACT

Ayurveda conceptualizes skin health (*Twak*) as a direct manifestation of internal physiological balance rather than an isolated cosmetic entity. Among the seven fundamental bodily tissues (*SaptaDhatus*), *Rasa Dhatus* occupies a primary position as the initial nourishing essence formed after digestion, responsible for sustaining cellular vitality and tissue integrity throughout the body.<sup>[1]</sup> Classical Ayurvedic texts emphasize that the qualitative and quantitative status of *Rasa Dhatus* profoundly influences skin hydration, complexion, texture, radiance, and resistance to aging.<sup>[2]</sup> The present review critically examines the Ayurvedic understanding of *Rasa Dhatus* in relation to skin health, highlighting the concept of *TwakSaarata* as an indicator of optimal tissue nourishment. It further explores the mechanisms through which *Rasa Dhatus* contributes to skin rejuvenation, immune competence, and anti-aging effects. Contemporary scientific evidence supporting the dermatological and rejuvenative potential of Ayurvedic herbs and *Rasayana* therapy is also analyzed. Medicinal plants such as *Manjistha*, *Neem*, *Turmeric*, *Aloe vera*, *Sariva*, *Guduchi*, *Shatavari*, *Guggul*, *Lodhra*, and *Chandana* exhibit antioxidant, anti-inflammatory, antimicrobial, and tissue-nourishing properties that validate traditional claims. Ayurveda thus provides a holistic and systemic approach to dermatology by addressing digestion, tissue metabolism, immunity, and rejuvenation at the cellular level. Although existing pharmacological and clinical studies are promising, further well-designed human trials are required to strengthen the integration of Ayurvedic interventions into contemporary dermatological practice.

**KEYWORDS:** Ayurveda, *Rasa Dhatus*, *Twak*, Skin Health, *TwakSaarata*, *Rasayana*, Anti-aging, Rejuvenation, Herbal Medicine.

### INTRODUCTION

The skin (*Twak*) is the largest and one of the most functionally complex organs of the human body, serving as a protective barrier, sensory interface, thermoregulatory system, and immunological shield.<sup>[1]</sup> In addition to these physiological roles, skin appearance is widely regarded as an external marker of internal health and vitality. While modern dermatology predominantly focuses on localized pathology and symptomatic management, Ayurveda adopts a comprehensive and

integrative perspective, interpreting skin health as a reflection of systemic balance and tissue nourishment.<sup>[2]</sup>

According to Ayurvedic philosophy, the state of health (*Swasthya*) is achieved through the equilibrium of *Doshas* (*Vata*, *Pitta*, *Kapha*), *Dhatus* (body tissues), *Malas* (excretory products), along with a harmonious state of mind and consciousness.<sup>[2]</sup> From this viewpoint, skin disorders and premature aging are not merely superficial abnormalities but outward expressions of deeper metabolic and nutritional disturbances occurring

within the body. Consequently, effective management of skin health necessitates addressing internal physiological processes rather than relying solely on topical or symptomatic interventions.

Central to this internal framework is *Rasa Dhatu*, the first and most fundamental of the seven Dhatus. Classical Ayurvedic texts describe *Rasa Dhatu* as the primary nourishing fluid that circulates throughout the body, sustaining all tissues and supporting cellular metabolism.<sup>[3]</sup> It is formed immediately after digestion and serves as the precursor for the sequential development of *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja*, and *ShukraDhatus*.<sup>[4]</sup> Due to its vital nourishing role, any qualitative impairment in *Rasa Dhatu* is believed to manifest early through changes in the skin, such as dryness, loss of radiance, uneven complexion, reduced elasticity, and accelerated aging.<sup>[3]</sup>

Ayurvedic scholars further emphasize the concept of *TwakSaarata*, which denotes excellence of skin quality resulting from optimal *Rasa Dhatu* formation and circulation.<sup>[6]</sup> Individuals possessing *TwakSaarata* exhibit smooth, soft, radiant skin with uniform complexion and enhanced resistance to environmental stressors. This concept highlights that true skin beauty is not artificially induced but naturally emerges from internal tissue vitality and metabolic harmony.

In recent decades, there has been growing scientific interest in traditional medical systems, including Ayurveda, for their potential role in dermatology and anti-aging research. Numerous studies have investigated Ayurvedic herbs traditionally classified under *Rasayana* therapy for their antioxidant, anti-inflammatory, immunomodulatory, and rejuvenative properties.<sup>[7]</sup> These findings provide a rational basis for the classical Ayurvedic assertion that skin rejuvenation is fundamentally linked to nourishment at the *Dhatu* level rather than superficial cosmetic correction.

## AIM AND OBJECTIVES

### Aim

To comprehensively review the Ayurvedic concept of *Rasa Dhatu* and its pivotal role in maintaining skin health, quality, and rejuvenation, with supportive evidence from contemporary scientific literature.

### Objectives

1. To elucidate the Ayurvedic concept of *Rasa Dhatu* and its formation process.
2. To analyze the relationship between *Rasa Dhatu* and *Twak* (skin) in the context of nourishment and aging.
3. To describe the concept of *TwakSaarata* and its clinical significance.
4. To evaluate the role of *Rasayana* therapy in skin rejuvenation and anti-aging.
5. To review scientific evidence supporting commonly used Ayurvedic herbs for skin health.

## MATERIALS AND METHODS

The present review is based on an extensive and systematic evaluation of both classical Ayurvedic literature and contemporary scientific publications. Primary Ayurvedic texts including *Charaka Samhita*, *Sushruta Samhita*, *AshtangaHridaya*, *Bhavaprakasha*, and their authoritative commentaries were reviewed to extract conceptual explanations related to *Rasa Dhatu*, *Twak*, and *Twak Saarata*.<sup>[1-7]</sup>

In addition, electronic databases such as PubMed, Scopus, Google Scholar, and other peer-reviewed sources were searched using keywords including “*Rasa Dhatu*,” “Ayurvedic dermatology,” “*TwakSaarata*,” “*Rasayana*,” “skin rejuvenation,” and “anti-aging herbs.” Published review articles, experimental studies, and clinical trials focusing on pharmacological actions relevant to skin health—such as antioxidant, anti-inflammatory, antimicrobial, wound-healing, and immunomodulatory effects—were included.

The collected data were critically analyzed and synthesized to present an integrated understanding of the Ayurvedic principles governing skin health and their relevance in contemporary dermatological research.

## RASA DHATU: FORMATION, COMPOSITION, AND PHYSIOLOGICAL SIGNIFICANCE

In the classical Ayurvedic framework, *Rasa Dhatu* is described as the first and most fundamental tissue formed in the body following digestion. Its formation represents the initial conversion of consumed food into biologically usable nourishment capable of sustaining life and supporting tissue metabolism.<sup>[4]</sup> The proper formation and circulation of *Rasa Dhatu* are considered indispensable for maintaining vitality, immunity, and skin health.

### Formation of *Rasa Dhatu* (*Rasa UtpattiKrama*)

The formation of *Rasa Dhatu* begins with the ingestion of food (*Ahara*), which undergoes primary digestion by *Jatharagni*, the central digestive fire located in the gastrointestinal tract.<sup>[4]</sup> This process converts food into *Ahara Rasa*, a nutritive essence that is further acted upon by *Rasa Dhatvagni*, the tissue-specific metabolic mechanism responsible for refining and assimilating nutrients appropriate for *Rasa Dhatu* formation.<sup>[4]</sup>

Once formed, *Rasa Dhatu* circulates throughout the body via channels (*RasavahaSrotas*), distributing nourishment to all tissues and organs. Classical texts emphasize that the efficiency of this transformation depends on the strength of *Agni*, quality of food, proper digestion, and unobstructed microcirculation.<sup>[5]</sup> Any disturbance in these processes can result in improperly formed *Rasa Dhatu*, leading to nutritional deficiencies at the cellular level.

### Prinana Karma: The Nourishing Function of *Rasa Dhatu*

The primary function of Rasa Dhatus is described as *Prinana Karma*, which denotes complete and continuous nourishment of the entire body.<sup>[5]</sup> Through this function, Rasa Dhatus sustains cellular metabolism, supports tissue repair, and provides the raw material required for the sequential formation of the remaining six Dhatus—Rakta, Mamsa, Meda, Asthi, Majja, and Shukra.<sup>[5]</sup>

Since Rasa Dhatus acts as the nutritional foundation for all subsequent tissues, its qualitative impairment can initiate a cascade of tissue weakness, manifesting externally as fatigue, poor immunity, and deterioration of skin quality. Therefore, Ayurveda places great emphasis on preserving the purity and adequacy of Rasa Dhatus to maintain long-term health and youthful appearance.

#### Elemental Composition of Rasa Dhatus

From the Panchamahabhuta perspective, Rasa Dhatus are predominantly composed of *JalaMahabhuta* (water element), which imparts fluidity, softness, and lubrication to bodily tissues.<sup>[4]</sup> This aqueous dominance enables Rasa Dhatus to maintain hydration, facilitate nutrient transport, and support plasma-like functions analogous to lymphatic and interstitial fluids described in modern physiology.

The water-dominant nature of Rasa Dhatus directly influences skin hydration and suppleness. Classical descriptions state that when Rasa Dhatus are abundant and well-formed, the skin appears moist, soft, and luminous, whereas deficiency or vitiation results in dryness, roughness, and loss of radiance.<sup>[7]</sup> These observations demonstrate a close conceptual parallel between Ayurvedic and contemporary understandings of skin hydration and tissue fluid balance.

#### TWAK (SKIN) IN AYURVEDA: STRUCTURE AND SIGNIFICANCE

In Ayurveda, Twak is not merely considered a passive protective layer but a dynamic organ that reflects the internal nutritional and metabolic status of the body.<sup>[3]</sup> Classical texts describe multiple layers of skin, each associated with specific functions and pathological manifestations, emphasizing its complexity and clinical importance.

Although Twak is sometimes classified as an *Upadhatu* of MamsaDhatu, its nourishment is primarily dependent on Rasa Dhatus.<sup>[3]</sup> This dependency underscores the Ayurvedic principle that the skin is among the earliest tissues to exhibit signs of nutritional imbalance or metabolic disturbance.

#### Twak as a Diagnostic Indicator of Rasa Dhatus

Ayurvedic physicians traditionally assess skin texture, color, moisture, and luster as part of routine clinical examination. These external features serve as visible indicators of internal tissue nourishment and metabolic efficiency.<sup>[3]</sup>

When Rasa Dhatus are well-formed and adequately circulating, the skin exhibits clarity, uniform complexion, softness, and resilience. Conversely, disturbances in Rasa Dhatus may manifest as pallor, dullness, dryness, hyperpigmentation, inflammatory lesions, or premature aging. Thus, Twak functions as a mirror reflecting the qualitative status of Rasa Dhatus and overall systemic health.<sup>[6]</sup>

#### CONCEPT OF TWAK SAARATA

##### Definition and Clinical Importance

*TwakSaarata* represents the excellence or optimal quality of the skin and is considered a direct expression of superior Rasa Dhatus.<sup>[6]</sup> Individuals possessing TwakSaarata are referred to as *Twak Saar Purush*, and their physical features are regarded as indicators of robust tissue nourishment and metabolic balance.

Classical Ayurvedic texts describe TwakSaarata as one of the eight types of *Sara* (tissue excellence), highlighting its importance in assessing constitutional strength and longevity.<sup>[6]</sup>

##### Characteristics of Twak Saar Purush

A person endowed with TwakSaarata exhibits distinct and desirable physical attributes, including smooth, soft, and unctuous skin that is neither excessively oily nor dry.<sup>[6]</sup> The complexion is clear, evenly toned, and naturally radiant, often compared metaphorically to the luster of lotus petals or moonlight.<sup>[3]</sup>

Additionally, such individuals possess fine, dense, and firmly rooted body hair, along with well-formed, smooth, and healthy nails displaying a natural pinkish hue.<sup>[6]</sup> Beyond physical appearance, Twak Saar Purush demonstrates enhanced tolerance to environmental factors such as heat, cold, and humidity, reflecting strong skin integrity and adaptive capacity.

##### TwakSaarata as Rasa Saarata

Many Ayurvedic scholars consider TwakSaarata to be synonymous with Rasa Saarata, suggesting that the finest expression of Rasa Dhatus is visibly manifested through the skin.<sup>[6]</sup> This interpretation reinforces the idea that skin excellence is not an isolated phenomenon but the outward expression of deep tissue nourishment and physiological harmony.

From this perspective, cosmetic interventions alone cannot produce lasting skin improvement unless Rasa Dhatus are adequately nourished and maintained. This foundational Ayurvedic principle forms the basis for systemic therapies aimed at enhancing skin health from within.

#### INTERRELATIONSHIP BETWEEN RASA DHATU AND TWAK

#### AYURVEDIC PATHOPHYSIOLOGY OF SKIN HEALTH AND AGING

The intimate relationship between Rasa Dhatu and Twak represents one of the most refined clinical insights of Ayurveda. Skin health is not viewed as an isolated structural phenomenon but as the functional outcome of continuous nourishment, metabolic balance, and efficient tissue regeneration governed primarily by Rasa Dhatu.<sup>[3]</sup> This relationship explains why disturbances in digestion, circulation, or tissue metabolism frequently manifest first through changes in skin quality.

### Rasa Dhatu as the Primary Nutrient Supply to the Skin

Rasa Dhatu serves as the principal medium through which nutrients reach the skin at the cellular level.<sup>[7]</sup> Through uninterrupted circulation within the *RasavahaSrotas*, it delivers water, electrolytes, micronutrients, and subtle life-sustaining components essential for maintaining epidermal and dermal integrity.<sup>[4]</sup>

When Rasa Dhatu is abundant, pure, and well-circulated, skin cells receive optimal nourishment, enabling effective cell turnover, repair, and regeneration. This continuous renewal process maintains skin thickness, elasticity, and barrier function, thereby preserving youthful appearance and resilience against environmental stressors.<sup>[7]</sup>

### Role of Rasa Dhatu in Skin Hydration and Elasticity

Due to the predominance of *JalaMahabhuta*, Rasa Dhatu plays a crucial role in maintaining tissue hydration and suppleness.<sup>[4]</sup> Adequate hydration ensures that the skin remains soft, smooth, and flexible, while preventing fissuring, roughness, and premature wrinkling.

Classical Ayurvedic descriptions of dry (*Ruksha*), rough (*Khara*), and dull (*Shyava*) skin are often associated with depletion or vitiation of Rasa Dhatu.<sup>[7]</sup> These observations parallel modern dermatological findings where impaired hydration and reduced intercellular fluid contribute to loss of elasticity, fine lines, and accelerated aging.

### Influence of Rasa Dhatu on Skin Complexion and Radiance

Healthy skin complexion (*Varna* and *Prabha*) is considered a direct reflection of properly formed Rasa Dhatu.<sup>[3]</sup> When Rasa Dhatu is pure and well-nourished, it imparts clarity, uniform tone, and natural radiance to the skin.

Conversely, impaired Rasa Dhatu—often due to improper digestion, poor dietary habits, or chronic stress—leads to dullness, uneven pigmentation, pallor, or inflammatory discoloration. Ayurveda emphasizes that external applications alone cannot restore complexion unless internal Rasa quality is corrected, reinforcing the systemic basis of skin health.<sup>[3]</sup>

## ROLE OF AMA AND DOSHA IMBALANCE IN SKIN PATHOLOGY

### Ama Formation and Its Dermatological Impact

*Ama* refers to incompletely digested metabolic waste formed due to weak or disturbed *Agni*.<sup>[5]</sup> When present within Rasa Dhatu, *Ama* obstructs microcirculation and interferes with nutrient delivery to the skin. This results in congestion, inflammation, and impaired cellular metabolism.

Clinically, *Ama*-laden Rasa Dhatu manifests as acne, eczema, urticaria, pigmentation disorders, and chronic inflammatory skin conditions.<sup>[7]</sup> From an aging perspective, persistent *Ama* accumulation accelerates tissue degeneration by promoting oxidative stress and low-grade inflammation, thereby hastening the appearance of wrinkles, sagging, and dullness.

### Dosha Involvement in Rasa Dhatu–Twak Disorders

Dosha imbalance significantly modifies the pathological expression of skin disorders arising from Rasa Dhatu disturbance.

- **Pitta vitiation**, often associated with heat and inflammation, leads to erythema, burning sensation, acne, hyperpigmentation, and premature aging.<sup>[3]</sup>
- **Vata imbalance**, characterized by dryness and degeneration, contributes to roughness, cracking, loss of elasticity, and early wrinkle formation.<sup>[7]</sup>
- **Kapha aggravation** results in oiliness, clogged pores, dull complexion, and sluggish skin metabolism.

Ayurveda emphasizes that skin disorders are rarely caused by a single Dosha but result from complex interactions between Doshas, Rasa Dhatu, and *Ama*, necessitating a comprehensive therapeutic approach.

### RASA DHATU, OJAS, AND IMMUNE RESILIENCE OF THE SKIN

Rasa Dhatu is regarded as the foundational precursor for the formation of *Ojas*, the subtle essence responsible for vitality, immunity, and tissue resistance.<sup>[5]</sup> Well-nourished Rasa Dhatu contributes to robust *Ojas* formation, which in turn enhances the skin's ability to resist infections, allergens, and environmental damage.

From a dermatological standpoint, strong *Ojas* manifests as glowing skin, stable complexion, quick wound healing, and resistance to recurrent infections.<sup>[5]</sup> Conversely, depletion of Rasa Dhatu weakens *Ojas*, rendering the skin vulnerable to chronic inflammation, delayed healing, and premature aging.

## AYURVEDIC UNDERSTANDING OF SKIN AGING

### Aging as a Degenerative Process of Dhatus

Ayurveda describes aging (*Jara*) as a natural but modifiable process characterized by progressive depletion of Dhatus, beginning subtly with Rasa Dhatus.<sup>[7]</sup> As Rasa quality declines with age, nourishment to subsequent tissues becomes inadequate, leading to visible signs such as dryness, thinning of skin, loss of elasticity, wrinkles, and diminished radiance.

This Dhatus-centric explanation of aging aligns with modern concepts of reduced cellular regeneration, impaired hydration, oxidative damage, and collagen degradation observed in aging skin.

#### Role of Chronic Inflammation and Oxidative Stress

Ayurvedic texts indirectly describe chronic inflammation and oxidative stress through concepts such as Pitta aggravation and Ama accumulation<sup>3</sup>. Persistent low-grade inflammation damages tissue integrity and accelerates Dhatus depletion, thereby contributing to premature aging.

Maintenance of Rasa Dhatus through proper digestion, detoxification, and nourishment is therefore considered central to delaying the aging process and preserving skin youthfulness.

#### CORRELATION WITH MODERN DERMATOLOGICAL CONCEPTS

Modern physiology describes plasma, lymph, and interstitial fluid as primary media for nutrient transport, hydration, immune defense, and waste removal. These functions closely parallel the Ayurvedic description of Rasa Dhatus.<sup>[4]</sup>

Similarly, contemporary research recognizes hydration, antioxidant defense, immune competence, and collagen integrity as central determinants of skin health and aging. Ayurveda integrates these factors holistically through the maintenance of Rasa Dhatus, Agni balance, Dosha regulation, and Rasayana therapy, offering a comprehensive framework for preventive and rejuvenative dermatology.

#### RASAYANA THERAPY: AYURVEDIC FOUNDATION OF SKIN REJUVENATION AND ANTI-AGING

The concept of *Rasayana* occupies a central position in Ayurvedic rejuvenative medicine. Unlike symptomatic or cosmetic approaches, Rasayana therapy aims to enhance longevity, vitality, immunity, and tissue excellence by nourishing the Dhatus at a fundamental level.<sup>[30]</sup> When applied to dermatology, Rasayana focuses on restoring internal balance, improving tissue metabolism, and promoting sustained skin health rather than producing temporary superficial effects.

#### Conceptual Basis of Rasayana in Skin Health

Rasayana therapy functions through multiple mechanisms, including optimization of *Agni* (digestive

and tissue metabolism), enhancement of DhatuPoshana (tissue nourishment), purification of microchannels (*Srotoshodhana*), and augmentation of Ojas.<sup>[30]</sup> Since Rasa Dhatus serve as the primary nutritional substrate for all tissues, Rasayana interventions primarily target the quality and circulation of Rasa Dhatus to ensure long-term skin vitality.

In the context of skin, Rasayana does not merely aim to reduce wrinkles or pigmentation but seeks to improve cellular regeneration, hydration, immune competence, and resistance to environmental stressors. This deep-acting rejuvenative strategy distinguishes Ayurvedic dermatology from conventional cosmetic paradigms.

#### Objectives of Rasayana for Skin Rejuvenation

When Rasayana therapy is applied for dermatological benefits, it aims to achieve the following outcomes:

1. Enhancement of skin cell turnover and regeneration
2. Improvement in hydration, elasticity, and firmness
3. Reduction of oxidative stress and inflammation
4. Preservation of collagen and elastin integrity
5. Delay of intrinsic and extrinsic aging processes
6. Restoration of natural complexion and radiance.<sup>[30]</sup>

These effects collectively contribute to the development and maintenance of TwakSaarata, indicating excellence of skin tissue.

#### RESEARCH-SUPPORTED AYURVEDIC HERBS FOR SKIN HEALTH AND ANTI-AGING

A growing body of scientific literature supports the traditional use of several Ayurvedic herbs classified under Rasayana or blood-purifying (*RaktaPrasadana*) categories. These herbs exert multifaceted actions including antioxidant, anti-inflammatory, antimicrobial, immunomodulatory, and tissue-nourishing effects, which are essential for skin rejuvenation.

#### Manjistha (*Rubicordifolia*)

Manjistha is widely recognized in Ayurveda for its role in blood purification and complexion enhancement. It has been traditionally used in skin disorders associated with discoloration, inflammation, and toxin accumulation.<sup>[8]</sup>

Scientific studies demonstrate that Manjistha possesses potent antioxidant and anti-inflammatory properties, which help reduce oxidative damage and inflammatory responses within the skin.<sup>[9,10]</sup> By supporting metabolic detoxification and improving microcirculation, Manjistha contributes to clearer complexion, improved radiance, and balanced skin tone. Its bioactive compounds, including anthraquinones and glycosides, play a significant role in regulating cellular turnover and preventing premature skin aging.<sup>[8-10]</sup>

#### Neem (*Azadirachtaindica*)

Neem is one of the most extensively studied Ayurvedic plants for dermatological applications. Classical texts

describe it as bitter, cooling, and purifying, making it especially effective in inflammatory and infectious skin conditions.<sup>[11]</sup>

Modern research confirms Neem's strong antimicrobial, anti-inflammatory, and antioxidant activities. Active constituents such as nimbidin, nimbin, azadirachtin, and quercetin inhibit microbial growth, reduce inflammation, and promote skin healing.<sup>[11,12]</sup> Neem is particularly effective in acne, eczema, and other Pitta-dominant skin disorders. Its ability to enhance skin resilience against environmental pollutants further supports its role in anti-aging skincare.

#### **Turmeric (*Curcuma longa*)**

Turmeric is a cornerstone herb in Ayurvedic dermatology and Rasayana therapy. Traditionally used for enhancing complexion and promoting wound healing, Turmeric is valued for its ability to pacify Pitta and purify blood.<sup>[13]</sup>

Curcumin, the principal active compound, exhibits powerful antioxidant, anti-inflammatory, and photoprotective effects. Research demonstrates its efficacy in reducing oxidative stress, inhibiting collagen degradation, enhancing wound healing, and protecting against ultraviolet-induced skin damage.<sup>[13-15]</sup> These properties make Turmeric particularly effective in preventing photo-aging, hyperpigmentation, and inflammatory dermatoses.

#### **Sariva (*Hemidesmus indicus*)**

Sariva is traditionally described as cooling, detoxifying, and complexion-enhancing. It is commonly prescribed in chronic inflammatory and allergic skin disorders.<sup>[16]</sup>

Pharmacological studies indicate that Sariva possesses antioxidant and anti-inflammatory activities, which help neutralize free radicals and soothe irritated skin.<sup>[16,17]</sup> By supporting systemic detoxification and calming Pitta, Sariva contributes to clearer skin, uniform complexion, and enhanced radiance.

#### **Guduchi (*Tinospora cordifolia*)**

Guduchi is a renowned Rasayana herb known for its immunomodulatory and rejuvenative properties. Although not exclusively categorized as a dermatological drug, its systemic effects significantly benefit skin health.<sup>[18]</sup>

Research highlights Guduchi's ability to modulate immune responses, reduce chronic inflammation, and enhance antioxidant defense mechanisms. These actions are particularly beneficial in autoimmune and inflammatory skin conditions. By strengthening Ojas and improving tissue resistance, Guduchi supports skin vitality and delays degenerative changes.<sup>[18]</sup>

#### **Aloe Vera (*Aloe barbadensis Miller*)**

Aloe Vera is extensively researched for its hydrating, soothing, and wound-healing properties. Classical

Ayurvedic texts describe it as cooling and nourishing, suitable for Pitta-related skin disorders.<sup>[19]</sup>

Clinical studies confirm Aloe Vera's efficacy in improving skin hydration, enhancing barrier function, reducing inflammation, and accelerating wound repair.<sup>[20]</sup> Its polysaccharides stimulate fibroblast activity and collagen synthesis, improving skin elasticity and reducing wrinkles.<sup>[21]</sup> Additionally, its antioxidant activity protects skin from oxidative stress and environmental damage.

#### **Shatavari (*Asparagus racemosus*)**

Shatavari is classified as a prime Rasayana herb with nourishing and cooling properties. Traditionally indicated for rejuvenation and tissue nourishment, it is particularly beneficial for dry, sensitive, and aging skin.<sup>[22]</sup>

Experimental studies demonstrate Shatavari's antioxidant and anti-stress properties, which help mitigate oxidative damage and stress-induced skin disorders.<sup>[22,23]</sup> Its unctuous nature improves skin hydration and elasticity, making it valuable in preventing dryness and premature aging.

#### **Guggul (*Commiphora mukul*)**

Guggul is traditionally used for its detoxifying and anti-inflammatory actions, particularly in chronic skin conditions such as acne and cystic lesions.<sup>[24]</sup>

Scientific evidence supports its role in reducing inflammation, regulating sebum production, and inhibiting microbial growth.<sup>[24,25]</sup> Guggulsterones contribute to its therapeutic efficacy, making it effective in managing inflammatory and congestive skin disorders.

#### **Lodhra (*Symplocos racemosa*)**

Lodhra is valued for its astringent, cooling, and complexion-enhancing properties. It is traditionally prescribed for skin tightening, pore refinement, and inflammatory conditions.<sup>[26]</sup>

Research indicates that Lodhra exhibits anti-inflammatory and antioxidant activities, which help reduce blemishes and promote even skin tone.<sup>[26,27]</sup> Its astringent nature supports skin firmness and texture improvement.

#### **Chandana (*Santalum album*)**

Chandana, or Sandalwood, is highly esteemed for its cooling, soothing, and antiseptic properties. Classical texts describe its role in reducing burning sensation, inflammation, and discoloration.<sup>[28]</sup>

Modern studies confirm its anti-inflammatory, antimicrobial, and antioxidant effects. Sandalwood oil helps calm irritated skin, reduce redness, and improve complexion while protecting against environmental

damage.<sup>[28,29]</sup> Its regular use supports skin clarity and youthful appearance.

## DISCUSSION

Ayurveda provides a deeply integrative and time-tested framework for understanding skin health by situating *Twak* as a dynamic reflection of internal physiological harmony rather than an isolated anatomical structure. The present review highlights *Rasa Dhatu* as the foundational tissue governing nourishment, hydration, immunity, and regenerative capacity of the skin. The concept of *TwakSaarata* elegantly encapsulates this relationship, illustrating that excellence of skin quality arises from optimal internal tissue nourishment and metabolic balance rather than from superficial cosmetic intervention.<sup>[36]</sup>

One of the most significant strengths of the Ayurvedic model lies in its emphasis on *Agni*, *DhatuPoshana*, and *Srotas* integrity. Impaired digestion and tissue metabolism lead to the formation of *Ama*, which disrupts *Rasa Dhatu* circulation and manifests externally as inflammatory skin disorders, dull complexion, or premature aging.<sup>[5,7]</sup> This systemic explanation aligns with modern insights linking chronic inflammation, oxidative stress, impaired microcirculation, and immune dysregulation to dermatological pathology and aging processes.

The review further demonstrates that the Ayurvedic explanation of skin aging as a progressive *Dhatu* depletion beginning at the level of *Rasa Dhatu* offers a holistic counterpart to contemporary theories of cellular senescence, collagen degradation, and reduced regenerative potential. The Ayurvedic emphasis on hydration, nourishment, immune competence, and antioxidant defense through *Rasa* maintenance closely parallels modern dermatological priorities, though approached through an integrative and preventive lens.<sup>[4,7]</sup>

Rasayana therapy emerges as a cornerstone of Ayurvedic dermatology, extending beyond symptomatic relief to address the biological roots of skin degeneration. Unlike conventional anti-aging strategies that focus on topical correction, Rasayana aims at sustained rejuvenation through enhancement of cellular metabolism, immune strength (*Ojas*), and tissue regeneration.<sup>[30]</sup> This approach is particularly relevant in the context of chronic skin disorders, stress-related dermatoses, and premature aging.

The pharmacological review of Ayurvedic herbs further reinforces the scientific plausibility of traditional claims. Herbs such as *Manjistha*, *Neem*, *Turmeric*, *Aloe vera*, *Guduchi*, and *Shatavari* demonstrate antioxidant, anti-inflammatory, antimicrobial, immunomodulatory, and collagen-protective actions that directly correspond to mechanisms involved in skin aging and disease.<sup>[8-29]</sup> Importantly, these herbs exhibit multi-targeted effects

due to their complex phytochemical composition, offering an advantage over single-target synthetic agents.

## Strengths of the Ayurvedic Approach to Skin Health

- Holistic Pathophysiology** – Ayurveda addresses skin disorders by correcting systemic imbalances involving digestion, tissue nutrition, Dosha regulation, and mental health rather than treating isolated lesions.
- Preventive and Rejuvenative Focus** – Rasayana therapy emphasizes long-term maintenance of skin vitality and prevention of premature aging rather than episodic symptomatic management.<sup>[30]</sup>
- Multi-Dimensional Therapeutic Action** – Ayurvedic herbs simultaneously target inflammation, oxidative stress, immunity, detoxification, and tissue nourishment.
- Individualized Treatment Paradigm** – Constitutional assessment (*Prakriti*, *Sara*, *Agni*) allows personalized therapeutic planning, enhancing clinical relevance.

## Limitations and Future Research Directions

Despite its conceptual strength and growing scientific support, several limitations must be addressed for broader integration of Ayurvedic dermatology into modern healthcare systems.

- Need for Robust Clinical Trials** – Although *in vitro* and animal studies are promising, large-scale, randomized, double-blind, placebo-controlled human trials are required to establish efficacy, safety, and dosage standards across diverse populations.
- Standardization Challenges** – Variability in raw material sourcing, processing, and formulation affects reproducibility and clinical outcomes. Strict quality-control protocols are essential.
- Mechanistic Elucidation** – Further molecular and cellular studies are required to clarify precise pathways through which Ayurvedic formulations influence skin biology.
- Pharmacokinetic Studies** – Understanding absorption, metabolism, tissue distribution, and bioavailability of herbal constituents is crucial, particularly for systemic Rasayana therapies.
- Comparative Effectiveness Research** – Head-to-head comparisons between Ayurvedic and conventional dermatological treatments would aid evidence-based integrative practice.

## CONCLUSION

Ayurveda offers a profound and holistic understanding of skin health by recognizing *Twak* as a direct manifestation of internal tissue nourishment governed primarily by *Rasa Dhatu*. The classical concept of *TwakSaarata* highlights that true skin radiance, resilience, and youthfulness emerge from balanced digestion, efficient tissue metabolism, and sustained cellular nourishment rather than from superficial cosmetic measures alone.

Contemporary scientific research increasingly validates the antioxidant, anti-inflammatory, antimicrobial, immunomodulatory, and rejuvenative properties of numerous Ayurvedic herbs traditionally used for skin health. Rasayana therapy, in particular, provides a comprehensive anti-aging strategy by enhancing tissue regeneration, immune strength, and resistance to environmental stressors.

While existing evidence is encouraging, systematic and high-quality clinical research remains essential to fully harness the therapeutic potential of Ayurvedic dermatology. With appropriate scientific validation and standardization, Ayurvedic principles centered on Rasa Dhatu nourishment can play a valuable role in integrative dermatological and anti-aging practice, offering sustainable and holistic solutions for long-term skin well-being.

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