



ORIGINAL ARTICLE

AN AYURVEDIC PERSPECTIVE ON PHOTOAGING-CONCEPTUAL UNDERSTANDING AND REJUVENATING SOLUTIONS

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ARTICLE HISTORY

Received: 31 January 2026

Accepted: 22 June 2026

Available online

Version 1.0: 30 September 2026

Keywords

Photoaging, Akalaja Jara, Ayurveda, Bhrajaka Pitta, Rasayana

Additional information

Peer review: Publisher thanks Sectional Editor and the other anonymous reviewers for their contribution to the peer review of this work.

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CITE THIS ARTICLE

Anjana C, Anandalakshmy KN. An Ayurvedic Perspective On Photoaging-Conceptual Understanding and Rejuvenating Solutions. Kerala Journal of Ayurveda. 2026;5(3):06-12. <https://doi.org/10.55718/kja.585>



Abstract

Photoaging is a major contributor to premature skin aging and results from the cumulative effects of ultraviolet (UV) radiation on cutaneous structures. It presents clinically with wrinkles, laxity, dyspigmentation, dryness, and vascular changes, and histologically with collagen degeneration, elastosis, epidermal irregularity, and chronic inflammation. At the molecular level, UV radiation induces oxidative stress, DNA damage, inflammatory mediators, and matrix metalloproteinase activation, accelerating structural breakdown of the skin beyond intrinsic aging. In Ayurveda, aging is described under the concept of *Jara* and is classified into *Kalaja Jara* (chronological) and *Akalaja Jara* (premature). This article interprets photoaging as a form of *Akalaja Jara* caused by excessive exposure to *Atapa*, possessing *Ushna* and *Tikṣṇa* qualities that primarily aggravate *Bhrajaka Pitta* in the skin. Persistent *Pitta* vitiation leads to secondary *Vata* aggravation, *kapha kshaya*, *Rakta Dushti*, and localised *Srotodushti*, resulting in impaired nourishment of *Twak* and progressive degenerative changes. Alterations in *Chaya* and *Prabha* correspond to pigmentary disorders and loss of skin radiance observed in photoaging. A combined review of classical Ayurvedic texts and contemporary dermatological literature was conducted to correlate traditional concepts with modern mechanistic pathways. Therapeutic strategies emphasizing *Vata-Pitta Samana*, *Rakta Prasadana*, and *Twak Dhatu Poshana* are proposed. Interventions such as *Rasayana* therapy, *Varnya*, *Sothahara*, and *Sandhaneeya* formulations, along with *Dinacharya*, *Ritucharya*, and *Sodhana* procedures, address oxidative damage, inflammation, and tissue degeneration. This integrative model offers a holistic and preventive approach to photoaging. Further clinical and experimental studies are required to validate these approaches.

Introduction

Aging is marked by a gradual decline in physiological integrity, resulting in diminished function and greater susceptibility to death.^[1] Two main theories attempt to explain the process of aging. The first theory proposes that aging is a genetically programmed process. Evidence for this comes from telomere shortening, in which the ends of chromosomes gradually shorten with each cell division. When telomeres reach a critically short length, cells either stop dividing or undergo programmed cell death (apoptosis). The second theory attributes aging primarily to the accumulation of environmental damage. In the skin, both genetic factors and environmental influences contribute to the aging process.^[2] These two types of aging affect the skin in different ways, both clinically and biologically, and are known as intrinsic (natural) aging and extrinsic (environment-related) aging.^[3] Of all external factors, ultraviolet (UV) light is recognised as the most significant contributor to skin aging.^[4]

Photoaging is a degenerative process that affects the skin and its supporting structures. It occurs cumulatively over time and is mainly influenced by the amount of sun exposure and skin pigment.^[5] Ultraviolet radiation (UVR) is a powerful trigger for the production of reactive oxygen species (ROS) in the skin. It is divided into three categories according to wavelength: UVA (315–400 nm), UVB (280–315 nm), and UVC (190–280 nm). Among these, UVA and UVB are the primary components of solar UVR that impact biological systems. The stratospheric ozone layer efficiently blocks highly harmful UVC rays, preventing them from reaching the Earth's surface.^[6] Photoaging is associated with DNA damage, increased production of reactive oxygen species (ROS), inflammation, and breakdown of the extracellular matrix (ECM).^[7] In addition to the natural aging process, areas frequently exposed to sunlight, such as the face, neck, and backs of the hands and forearms, are subjected to further harm, primarily from ultraviolet (UV) radiation. Consequently, many skin functions that typically deteriorate with age experience a more rapid decline in photoaged skin.^[2] Photoaged skin is characterised by coarse wrinkles, loss of elasticity, pigmented spots, dryness, verrucous papules, and telangiectasia.^[8]

In the classics, *jara* (aging) is considered a natural phenomenon. *Acharya Sushruta*, while explaining *swabava bala pravrutta vyadhi*, classified it into two types, i.e., *Kalaja Jara*, those which appear at the usual time (chronological aging) and *Akalaja Jara*, those which appear at an improper time (premature aging).^[9] In Ayurveda, the radiance of skin is dependent upon *chaya* (shade) and *Prabha* (lustre), which reflects *varna* (complexion). Health and ominous ill-health are reflected in the skin.^[10] *Pitta dosha*, primarily associated with metabolism and transformation, plays a central role in maintaining skin health.^[11] The manifestation of healthy, radiant skin is attributed to the balanced state of *Pitta*, specifically *Bhrajaka Pitta*, a subtype that resides in the skin.^[12] The *sparsanendriya* (skin) forms one of the locations of *Vata dosha*,^[13] and inherent base for *sparsa*,^[14] establishing a connection between *vata dosha* and skin function and well-being.

A comprehensive correlation between contemporary photoaging pathways and the Ayurvedic concepts of *Bhrajaka Pitta*, *Chaya*, *Prabha*, *Rakta Dushti*, and *Akalaja Jara* has not yet been systematically established. The incidence of photoaging is steadily increasing owing to lifestyle changes and exposure to environmental stressors. There is a growing demand for natural, personalised, and culturally rooted skincare solutions. This article develops a novel integrative framework for understanding photoaging, mapping modern mechanistic insights into the doshic dysregulation. This framework offers a unique perspective on developing personalised Ayurvedic strategies for the prevention and management of photoaging, bridging traditional wisdom and contemporary dermatological concerns.

Methods

A combined textual and literature-based approach was employed to explore Ayurvedic and modern scientific perspectives on aging and photoaging. Classical Ayurvedic texts, including *Ashtanga Hridaya*, *Ashtanga Samgraha*,

Charaka Samhita, *Sushruta Samhita*, and *Sarangadhara Samhita*, were systematically reviewed to extract references related to *jara* (aging), *dosha* (*Vata*, *Pitta*, *Kapha*), *dushya* (affected tissues), *srotas* (body channels), medications (herbal formulations and *Rasayanas*), and *charyas* (therapeutic procedures and lifestyle interventions). Simultaneously, a comprehensive review of modern scientific literature was conducted using PubMed and Google Scholar to identify studies on photoaging mechanisms, focusing on ultraviolet (UV) radiation-induced oxidative stress, collagen degradation, matrix metalloproteinase activation, DNA damage, and inflammatory pathways. Relevant articles published up to December 2025 were screened using the keywords *Photoaging*, *Akalaja Jara*, *Ayurveda*, *Bhrajaka Pitta*, and *Rasayana*., and data were extracted to synthesise the current understanding of the molecular basis of photoaging. Findings from both Ayurvedic and modern literature were integrated to establish potential correlations between the traditional concepts of aging and contemporary mechanistic insights, providing a framework for translational approaches in skin rejuvenation and anti-aging interventions.

Results and Discussion

Mechanism of photoaging

Photoaging refers to the progressive decline in the skin's structure and function, likely resulting from cumulative DNA damage caused by repeated and prolonged exposure to ultraviolet radiation (UVR) from sunlight or artificial sources.^[15]

The sun serves as the principal source of ultraviolet radiation (UVR) and is the primary factor in photoaging, and is partitioned into three distinct categories based on wavelength.^[6]

UVC rays are almost entirely absorbed by the ozone layer, therefore, they do not reach or impact the skin. UVB radiation affects the outermost layer of the skin, causing sunburns. UVA radiation penetrates more deeply, although UVA photons are less energetic and require greater quantities to cause the same amount of damage as UVB, their abundance and deeper penetration lead to significant skin damage.^[16] The epidermis is affected principally by UVB, and the dermis by both UVB and UVA.^[17]

Ultraviolet radiation triggers the formation of reactive oxygen species (ROS), which activate nuclear factor kappa-B (NF-κB). The activation of this transcription factor upregulates the expression of proinflammatory cytokines and growth factors, such as interleukin-1 (IL1), tumour necrosis factor (TNF), and epidermal growth factor (EGF). The mitogen-activated protein kinase (MAPK) pathway is upregulated by ultraviolet radiation. The transcription factor activator protein 1 (AP-1) is formed by the heterodimerization of the transcription factor precursors c-Fos and c-Jun. This potentiates the effects of matrix metalloproteinases (MMPs), leading to collagen degradation and procollagen inhibition. Ultraviolet radiation also worsens photoaging by amplifying the process of telomere shortening.^[18]

Fine and coarse wrinkles, dryness, coarseness, telangiectasia, yellowness, mottled pigmentation, laxity, loss of tensile strength, and comedones are characteristic. Histologically, there is elastosis, an accumulation of profuse upper dermal, amorphous, degenerated elastic tissue and it shows progressive degenerative changes in collagen.^[15]

Photoaging vs chronological aging

Aging that happens naturally due to genetics and the mere passage of time itself is called chronological (intrinsic) aging. In contrast to chronological aging, which is largely shaped by genetic and physiological factors, photoaging is chiefly determined by a person's exposure to sunlight and the melanin levels of their skin. Those who spend considerable time in the sun, reside in areas with intense sunlight, and have fair complexions are exposed to greater amounts of ultraviolet radiation (UVR), which leads to more pronounced signs of photoaging.^[16]

Table 1-Difference between chronological aging and Photoaging [18]

	Chronological aging	Photoaging
Histological features	Loose, short, thin, disorganized collagen Epidermal atrophy Loss of rete pegs Flattening of epidermal-dermal junction Reduced melanocytes, Langerhans and mast cells	Elastosis Collagen fragmentation Irregular epidermal thickness Increased glycosaminoglycans and proteoglycans Increased inflammatory markers (mast cells, eosinophils, mononuclear cells) Melanogenesis
Clinical features	Thin skin Fine wrinkles Xerosis Laxity Cherry angioma Seborrheic keratoses	Atrophic skin Coarse wrinkles Leathery skin Lentigines Bronzed appearance Yellow cobblestone appearance Telangiectasia Bruising Sun-induced dermatitis

Jara (aging)

In the classics, the process of aging is described under the concept of “Jara” (senescence), which is predominantly influenced by *Vata dosha*.^[19] It is considered as a natural and inevitable phenomenon, like hunger, thirst, and sleep. It is classified as *Swabhavabala Pravritta Roga*, meaning a condition that arises inherently due to the natural progression of time. *Kāla* (time) or *Pariṇama* (transformation) are recognised as its primary causative factors. Ayurveda further classifies aging into two distinct types: *Kalaja Jara*, which represents natural or time-bound aging, and *Akalaja Jara*, which refers to premature or pathological aging. While *Kalaja Jara* is an expected outcome of life's natural progression, *Akalaja Jara* results from external factors, such as improper lifestyle, diseases, or environmental influences.^[9] *Acharya Vagbhaṭa* and *Sarangadhara* proposed an insightful framework outlining the progressive decline of various biological functions over the course of life, correlating each stage

of degeneration with specific decades of aging. This offers a structured understanding of how different physiological attributes gradually diminish with age. The natural radiance and complexion of the skin (*Prabha and Chavi*) typically begin to deteriorate in the third decade, and the structural deterioration of *Twacha* (skin) becomes more evident from the fifth decade.^[20,21]

Table 2- Specific decades of aging [20,21]

DECADES	YEAR	VAGBHATA	SARANGADHARA
FIRST	1-10	Balya	Balya
SECOND	11-20	Vrddhi	Vrddhi
THIRD	21-30	Prabha	chavi
FOURTH	31-40	Medha	Medha
FIFTH	41-50	Tvacha	Tvacha
SIXTH	51-60	Sukra	Drishti
SEVENTH	61-70	Drishti	Sukra
EIGHT	71-80	Srotrendriya	Parakramasakti
NINTH	81-90	Mana	Budhi
TENTH	91-100	sarvendriya	karmendriya

The dosha-driven mechanism of photoaging

In Ayurveda, the damaging effects of continuous UV exposure are understood as manifestations of disturbed *Doshic* equilibrium. Excessive exposure to *Atapa* (sunlight) possessing *Ushna*(hot) and *Tikṣṇa*(sharp) qualities aggravates *Bhrajaka Pitta*. Subsequently, prolonged heat exposure induces *Vata prakopa* through the predominance of *Ruksha* guna and concomitant *Kapha kshaya*, leading to depletion of skin moisture, reduced lubrication, and compromised structural integrity.

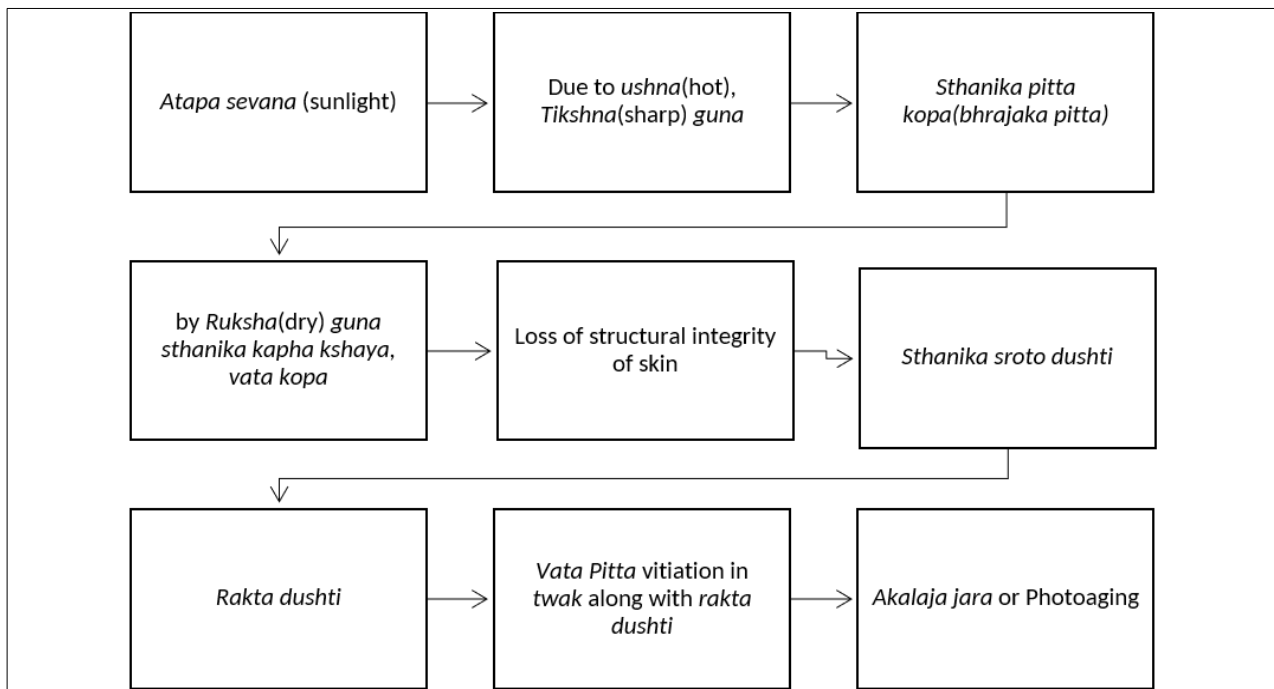
The aggravated doshas inturn causes localised *srotodushti*(channel dysfunction) and *Bhrajaka Pitta* simultaneously vitiates *Rakta* by *asraya-asrayi* relationship, resulting in *Rakta dushti*. This leads to improper nourishment of the *Twak*. In brief, chronic localised vitiation of *Vata* and *Pitta* in the *Twak*, along with *Rakta Dushti*, ultimately manifests as photoaging or *Akalaja Jara*.

Role of Pitta dosha

The term *pitta* is derived from the Sanskrit root *tap*, which means to generate heat.^[22] *Pitta* is located in *nabhi* (umbilical region), *amasaya* (stomach), *sweda*(sweat), *lasika*(lymph), *rudhira* (blood), *rasa* (plasma), *druk* (eyes) and *Sparsha*(skin),^[23] and is intimately associated with *sveda* (sweat) and *rakta* (blood) through the *Ashraya-Ashrayi Bhava* principle.^[24]

Pitta's physiological functions include *pakti* (digestion), *ushma* (maintenance of body heat), *darshana* (vision), *kshut* (hunger), and *trishna* (thirst), *ruchi*(taste), *Prabha*(lustre), *medha*(retention), *dhi*(intelligence), *shaurya*(strength) and *mardava* of *tanu*(softness of body) all of which are essential for systemic homeostasis.^[25]

Acharya Caraka, while explaining the functions of *pitta*, stated that the production of normal and abnormal temperature of the body, colour of the skin are due to *pitta*.^[11] *Cakrapani*, in his commentary, stated that these functions belong to *bhrajaka pitta*, which is located in the skin. The radiance and colour of the skin are determined by *chaya* (shade) and *prabha* (glow), both of which reflect internal health.^[26]



Flow chart 1- The dosha-driven mechanism of photoaging

UV exposure stimulates melanocyte activity, leading to increased melanin production that protects the skin and causes tanning. These pathophysiological processes, such as increased melanocyte activity and oxidative stress, can be understood as the vitiation of *pitta dosha*, particularly *Bhrajaka Pitta*. This disturbance subsequently manifests as altered *chaya* and *Prabha* of skin, aligning with the ayurvedic description of *pitta*'s role in determining complexion.

1. Loss of *Chaya*: Chronic UV exposure leads to pigmentation disorders such as melasma, solar lentigines ("age spots"), and uneven tone, reflecting impaired "shade" or uniformity of the skin.
2. Loss of *Prabha*: UV-induced oxidative stress diminishes skin luminosity by degrading dermal proteins and reducing vascular supply, resulting in a dull, wrinkled, and lifeless appearance.

Rakta and Sveda vitiation: According to the classics, *pitta* vitiation involves *rakta* and *sveda* disturbance.^[24] Modern science shows that UV exposure damages blood vessels (*rakta*), leading to telangiectasia (visible broken blood vessels), and disturbs sweat glands (*sveda*), impairing normal thermoregulation and detoxification through the skin. Indicating the involvement of *rakta* and *sweda* in photoaging. In classics, *atapa sevana* is mentioned as *raktavaha srotodushti nidana*.^[27]

Role of Vata dosha

Vata is the principle of movement,^[22] and is composed primarily of *vayu* and *akasa mahabhutas*.^[28] It governs all forms of motion and communication in the body. The *sparsanendriya* (skin) is described as a seat of *Vata*,^[13] directly linking this *dosha* to skin function and health. The *Vata* attributes such as *ruksha* (dry), *laghu* (light), *sheeta* (cold), *khara* (rough), *sukshma* (subtle) and *chala* (mobile),^[29] are evident in skin that has aged or been damaged by UV radiation. Continuous exposure to sunlight over time leads to

features such as dryness, fine wrinkles, roughness, and reduced thickness, all of which reflect an increase or aggravation of *Vata* (*Vata vriddhi*).

In a balanced state, *Vata dosha* plays a vital role in maintaining the body's vitality through various functions. As outlined in the classics, unvitiating *Vata* supports *Dhatu Gati* (transport and nourishment of tissues) and *Aksha Patava* (clarity and acuity of sense organs).^[13]

When *Vata* becomes imbalanced due to environmental stressors such as UV exposure, these functions are compromised. In the context of photoaging, the disruption of *dhatu gati* impairs nutrient distribution to the skin, while the decline in *aksha patava* manifests as reduced tactile acuity and sensory insensitivity. *Acharya Charaka* emphasises that *sparsa* (sense of touch) arises from the interaction of *Vayu* and *akasa*.^[14] Vitiating *Vata* undermines tactile sensitivity. The dry, rough texture of photoaged skin reduces its capacity to perceive subtle stimuli, resulting in a direct decline in *sparsa*.

Role of Kapha dosha

Kapha is one of the three fundamental doshas and is primarily constituted by the *Jala* (water) and *Prithvi* (earth) *mahabhutas*.^[28] Etymologically, the term *Sleshma* is derived from the root *Slīsh*, meaning "to embrace," "bind," or "hold together",^[22] signifying *Kapha*'s role in maintaining cellular integrity and the cohesion of bodily tissues, including the skin.

It is characterised by the qualities (*guna*) of *Snigdha* (unctuous), *Seeta* (cold), *Guru* (heavy), *Manda* (slow), *Slakshna* (smooth), *Picchila* (slimy), and *Sthira* (stable).^[30] These attributes contribute to the maintenance of skin hydration, smooth texture, structural stability, and resilience. In its balanced state, *Kapha* supports optimal moisture retention, elasticity, and firmness of the skin, thereby playing a significant role in protecting against premature skin aging and photoaging.

Srotas: channel dysfunction in photoaged skin

Srotas are intricate networks of micro- and macro-channels that serve as the primary vehicles for the circulation of dhatu, which are continuously subjected to dynamic metabolic processes.^[31] Prolonged and repeated exposure to ultraviolet (UV) radiation has a significant impact on the functioning of the localised srotas (bodily channels). Under normal conditions, these channels facilitate the smooth delivery of nutrients and the removal of metabolic waste, ensuring the vitality, elasticity, and complexion of the skin. However, continuous UV exposure leads to the accumulation of free radicals, oxidative stress, and metabolic toxins, which cause srotodushti. This impairs the movement of nutrients into peripheral tissues, disrupting proper cellular nourishment and detoxification. When vitiated doshas encounter obstructed Srotas, disease becomes inevitable. Thus, preserving the integrity and patency of Srotas is fundamental to preventing and managing skin degeneration

Rejuvenating solutions

Photoaging remains a complex clinical challenge driven by cumulative ultraviolet (UV) exposure and intrinsic aging mechanisms. Understanding the Ayurvedic basis of photoaging in terms of dosha imbalance provides valuable insights into its pathogenesis and management.

Since photoaging may be interpreted as a manifestation of Vata-Pitta prakopa and Kapha kshaya with Rakta dushti (vitiation of blood), the treatment should aim at Vata-Pitta shamana (pacifying vata and pitta), Rakta prasada, and Twak dhatu poshana (nourishing). Rasayana chikitsa (rejuvenation therapy) is indicated to counteract Vata-induced dhatukshaya and to delay Akalaja Jara. Varnya (complexion-promoting) and Sothahara (anti-inflammatory) chikitsa are employed to pacify Pitta-Rakta dushti, responsible for inflammation and discolouration, and to restore normal complexion, and Sandhaneeya chikitsa helps in repairing photo-induced tissue damage. As a preventive measure, Nidana Parivarjana (avoiding causative factors), along with the proper adoption of Dinacharya (daily regimen) and Ritucharya (seasonal regimen), can be practised to maintain doshic balance, thereby preventing the onset and progression of photoaging. Proper detoxification procedures (sodhana) also play a vital role in prevention and management. These therapeutic measures collectively rejuvenate the skin and prevent the further progression of photoaging.

■ Rasayana therapy

A foundational pillar of Ayurveda, it plays a vital role in preventing and managing photoaging by promoting rejuvenation, vitality, and overall well-being. Studies have shown that Rasayana formulations, such as Chyawanaprasha, reduced UV-induced skin roughness, erythema, oxidative stress, and epidermal thickening in hairless mice and in cell culture.^[32] Amalaki Rasayana improves DNA repair after UV damage.^[33] Drugs included under Charakokta Vayasthapana mahakashaya, such as Abhaya (*Terminalia chebula*), Dhatri (*Phyllanthus emblica*), Atirasa (*Asparagus racemosus*), and Manduka pami (*Centella asiatica*), exhibit antioxidant, anti-inflammatory, collagen-protective and MMP-inhibitory effects against UV damage.^[34-38] Mineral Rasayanas, such as pearl extracts (mukta), also show protection against UV-induced photoaging.^[39,40] Overall, Rasayana drugs exert their effects

through antioxidant defence, collagen preservation, and cellular protection, supporting their role in managing photoaging.

■ Varnya

Ayurvedic drugs with Varnya properties help to pacify Pitta and Rakta, while enhancing complexion, making them particularly beneficial for managing dyspigmentation associated with photoaging. They primarily act by inhibiting melanogenesis (tyrosinase) and providing antioxidant protection.^[41] The drugs of Varnya mahakashaya, like Chandana (*Santalum album*) and Madhuka (*Glycyrrhiza glabra*), have shown antiphotaging effects. Studies have shown that sandalwood oil reduces ROS and MMP-1,^[42] while licorice (*Glycyrrhiza glabra*) inhibits tyrosinase, reduces UV-induced oxidative stress, and suppresses photoaging pathways.^[43,44] Other varnya herbs like Haridra (curcumin),^[45] and Daruharidra (*Berberis aristata*) also show potent antiphotaging effects.^[46]

■ Sothahara

Chronic low-grade inflammation is associated with photoaging of the skin,^[47] highlighting the relevance of anti-inflammatory drugs in photoaging. The drugs of Sothahara mahakashaya (anti-inflammatory) are Patala (*Stereospermum suaveolens*), Agnimantha (*Clerodendrum phlomidis*), Syonaka (*Oroxylum indicum*), Bilwa (*Aegle marmelos*), Kasmarya (*Gmelina arborea*), Kantakari (*Solanum xanthocarpum*), Brihati (*Solanum indicum*), Sa laparni (*Desmodium gangeticum*), Prisiniparni (*Urtica picta*), and Gokshura (*Tribulus terrestris*). Studies have shown that saponins isolated from *Tribulus terrestris* protect normal human keratinocytes (NHEK) from UVB-induced programmed cell death.^[48]

■ Sandhaneeya

This group of drugs promote the joining of damaged tissues and supports skin healing and regenerative processes, helping restore integrity and counteract age-related deterioration.^[49] Charakokta sandhaneeya dravyas like Madhuka (*Glycyrrhiza glabra*), Madhuparni (*Tinospora cordifolia*), Prisiniparni (*Urtica picta*), Ambashtaki (*Cissampelos pareria*), Samanga (*Rubia cordifolia*), Mocharasa (*Salvia malabarica*), Dhataki (*Woodfordia fruticosa*), Lodra (*Symplocos racemosa*), Priyangu (*Calyculcarpa macrophylla*), Katphala (*Myrica nagi*) can be used in the context of photoaging.

■ Dinacharya

Ayurveda also emphasises Dinacharya (daily routine) as an essential part of maintaining skin health and youthfulness. Daily Abhyanga (oil massage) with medicated oil nourishes the body, soothes the nervous system, and delays the signs of aging. Snana (bathing) invigorates the body and boosts longevity.^[50]

■ Ritucharya

Seasonal regimens contribute to the prevention of photoaging by minimising seasonal dosha aggravation, particularly Pitta during Grishma and Sharad Ritu, when solar intensity is high. The adoption of cooling (Sheetala) regimens, Pitta-shamana ahara (pitta pacifying food), and seasonal protective measures helps to prevent Rakta dushti, hyperpigmentation, and inflammatory skin changes. Nourishing regimens during Hemanta and Shishira Ritu prevent Vata-induced skin dryness and degeneration.

Ritushodhana refers to seasonal purification therapies advocated to eliminate accumulated or aggravated doshas and to prevent the manifestation of disease.

Virechana in *Sharad Ritu* eliminates aggravated *Pitta* and *Rakta*, thereby preventing hyperpigmentation, erythema, and photosensitivity associated with photoaging. *Vamana* in *Vasanta Ritu* aids in eliminating accumulated *Kapha*, improving skin clarity and cellular metabolism. *Vasti* in *Varsha Ritu* helps to pacify aggravated *Vata*, thus preventing degenerative changes, such as dryness and fine wrinkles. Regular implementation of *ritushodhana* enhances *Agni*, improves tissue nutrition, preserves *Ojas*, and delays premature skin aging.^[51]

▪ Sodhana

Deeper detoxification procedures are highly recommended as they restore balance, enhance tissue strength, ignite digestive fire, and delay the aging process. *Virechana* (purgation) and *Vasti* (medicated enema), which are used to eliminate excess *Pitta* and *Vata*, respectively. Therapies such as *Nasya* (nasal application of medicated oils) and *Raktamokshana* (bloodletting) are also recommended for rejuvenation and clearing systemic toxins.

In addition to cleansing *vastis*, *Balavarnakara vastis*, including *Madhutailadhya yapana vasti*, can be used to enhance strength, improve complexion, promote vitality, and support tissue nourishment and overall health.^[52]

Conclusions

Photoaging represents a complex interplay between intrinsic aging and cumulative ultraviolet-induced damage, manifesting as structural and functional changes in the skin. From an Ayurvedic perspective, these changes reflect the vitiation of *Vata-Pitta doshas*, *kapha kshaya*, *Rakta* and *Srotodushti*, leading to *Akalaja Jara* or premature aging. Integrating classical Ayurvedic concepts with modern mechanistic understanding highlights the potential of *Rasayana*, *Varnya*, *Sothahara*, and *Sandhaneeya* therapies, along with *Dinacharya*, *Ritucharya*, and *Sodhana* procedures in preventing and managing photoaging.

As photoaging continues to be a global dermatological concern, this article explicitly identifies novel avenues to the integration of ayurvedic principles- particularly *rasayana* based rejuvenation, antioxidant phytochemicals and lifestyle-oriented photoprotective measures, with modern cosmetological strategies for prevention and management. Future research should focus on validating Ayurvedic formulations and interventions through randomised controlled trials and biomolecular analysis. Additionally, exploring genomics and metabolomics in the context of *Prakriti* (individual constitution) may deepen our understanding of personalised skincare.

In conclusion, integrating Ayurvedic principles with contemporary dermatological practices could enhance preventive and therapeutic approaches to maintaining youthful and radiant skin.

Limitations

This work is conceptual and relies on interpretative integration with Ayurvedic principles and modern dermatology.

Important limitations include limited clinical evidence, lack of standardised outcome measures, the individualised nature of Ayurvedic therapies, and the therapeutic context of certain correlations.

Future experimental and clinical studies are necessary to validate and operationalise these integrative approaches.

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