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PALITYA (PREMATURE GREYING OF HAIR): AN INTEGRATIVE REVIEW OF AYURVEDIC CONCEPTS AND MODERN BIOMEDICAL PERSPECTIVES

Review Article

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Abstract

Premature greying of hair is increasingly observed among young individuals and represents a growing cosmetic and psychosocial concern worldwide. In Ayurveda, premature greying is described as *Palitya*, a condition primarily caused by the vitiation of *Pitta dosha* along with the involvement of *Vata and Kapha*. Classical Ayurvedic texts identify multiple etiological factors including psychological stress, improper diet, lifestyle disturbances, and hereditary influences. In contemporary dermatology, the condition is termed premature canities and is characterized by reduced melanin production in hair follicles due to melanocyte dysfunction. Modern research highlights oxidative stress, genetic predisposition, nutritional deficiencies, endocrine imbalance, and environmental factors as major contributors to hair depigmentation. The present review aims to analyse classical Ayurvedic descriptions of *Palitya* and correlate them with current biomedical knowledge regarding hair pigmentation and premature greying. A literature review was conducted using databases including PubMed, Scopus, Web of Science, and Google Scholar along with classical Ayurvedic texts. Evidence suggests notable conceptual parallels between Ayurvedic explanations involving *Pitta* aggravation and *Ushma*and modern mechanisms involving oxidative stress and melanocyte depletion. Integrative understanding of these concepts may help develop novel preventive and therapeutic strategies for premature greying of hair. Further interdisciplinary research is required to validate Ayurvedic therapeutic approaches through clinical and molecular investigations.

Keywords

Palitya; Premature Canities; Ayurveda; Hair Pigmentation; Melanocyte Dysfunction; Oxidative Stress; Integrative Dermatology

1. Introduction

Hair plays an important role in aesthetic appearance and psychosocial well-being. Alterations in hair characteristics such as premature greying often led to emotional distress and reduced self-confidence. While greying of hair is a natural process associated with ageing, the increasing incidence of premature greying among young individuals has become a matter of clinical interest [1].

Premature greying is generally defined as the appearance of grey hair before the age of 20 years in Caucasians, before 25 years in Asians, and before 30 years in African populations [2]. Although it is primarily considered a cosmetic concern, it may also indicate underlying metabolic, nutritional, or endocrine disturbances.

Ayurveda provides detailed descriptions of hair physiology and disorders affecting hair. Premature greying is described as *Palitya* in classical Ayurvedic texts such as the *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* [8–10]. According to Ayurvedic principles, Palitya occurs due to aggravation of *Pitta dosha*, which produces excessive heat within the body and affects the hair follicles located in the scalp region.

Various etiological factors including anger *(Krodha),* grief *(Shoka),* excessive exertion (*Shrama*), improper diet, and hereditary predisposition have been described as important causes of *Palitya* [8,9]. These factors disturb the equilibrium of doshas and lead to pathological changes in hair follicles.

Modern dermatological research explains premature greying mainly through melanocyte dysfunction and oxidative stress mechanisms [3]. Damage to melanocytes results in decreased melanin synthesis and gradual loss of hair pigmentation.

The present review aims to analyse the Ayurvedic concept of *Palitya* and correlate it with contemporary biomedical research.

Objectives of this review include:

1. To analyse the etiological and pathological concepts of *Palitya* described in Ayurvedic literature.
2. To review modern biomedical explanations of premature greying of hair.
3. To identify similarities between traditional and modern concepts.
4. To explore integrative approaches for prevention and management.

2. Methodology of Literature Review

A narrative literature review was conducted to collect and analyse relevant information on *Palitya* and premature greying.

Scientific databases including PubMed, Scopus, Web of Science, and Google Scholar were searched using keywords such as *Palitya, Premature Canities, Hair Greying, Melanocyte Dysfunction, Hair Pigmentation,* and *Oxidative Stress*. Classical Ayurvedic texts were also consulted for traditional concepts [8–10].

Inclusion criteria included peer-reviewed articles discussing hair greying, melanocyte biology, or Ayurvedic dermatology. Studies not related to hair pigmentation disorders were excluded.

Priority was given to literature published between 2000 and 2024, although earlier landmark studies on hair follicle biology were also included [4].

3. Concept of *Palitya* in Ayurvedic Literature

According to Ayurveda, *Kesha* (hair) is considered a by-product (*Upadhatu*) of *Asthi Dhatu*, and its health depends upon proper nourishment of body tissues and balanced functioning of doshas [8].

Palitya refers to premature whitening of hair due to vitiation of *doshas*, particularly *Pitta*.

***Nidana* (Etiological Factors)**

Classical texts describe several causative factors:

Psychological factors

Krodha (anger)

Shoka (grief)

Lifestyle factors

Excessive exertion

Irregular sleep

Dietary factors

Excessive intake of spicy, sour, and fermented foods

Genetic predisposition (*Adibalapravritta*) [8,9]

***Samprapti* (Pathogenesis)**

The disease process involves:

Nidana sevana → *Pitta* aggravation → *Ushma* production → localization in scalp → damage to hair follicles → discoloration of hair → *Palitya*.

4. Modern Concept of Premature Canities

Hair pigmentation depends on melanocytes located in hair follicles. These cells synthesize melanin from tyrosine through enzymatic reactions involving tyrosinase [1].

Loss or dysfunction of melanocytes leads to reduced melanin production and grey hair.

5. Pathophysiology

During the anagen phase of the hair cycle, melanocytes actively produce melanin and transfer it to keratinocytes in the hair shaft [4].

This biochemical process generates reactive oxygen species, resulting in oxidative stress. When antioxidant defence mechanisms fail, melanocytes are damaged and pigmentation decreases [2].

Hydrogen peroxide accumulation within hair follicles has been shown to interfere with melanin synthesis by inhibiting tyrosinase activity [5].

6. Etiological Factors

Premature greying is considered multifactorial.

Major factors include:

Genetic predisposition [6]

Nutritional deficiencies including vitamin B12 and iron [7]

Thyroid disorders

Psychological stress

Smoking and environmental pollution

Many of these factors resemble Ayurvedic etiological factors described for *Palitya*.

7. Management Approaches

Ayurvedic Management

Nidana Parivarjana

Shodhana therapies such as *Vamana, Virechana, Nasya*

External therapies including *Shiro Abhyanga* and herbal applications

Rasayana therapy [8–10]

Modern Management

Nutritional supplementation

Antioxidant therapy

Treatment of underlying disorders

Cosmetic hair colouring

8. Discussion

Ayurvedic concepts of *Palitya* provide a holistic understanding of premature greying involving diet, lifestyle, psychological factors, and hereditary influences. The central role of *Pitta dosha* in *Palitya* reflects the importance of

metabolic heat and biochemical activity in hair pigmentation.

Modern research indicates that oxidative stress and melanocyte depletion play key roles in premature greying. Interestingly, the Ayurvedic concept of *Ushma*generated by aggravated *Pitta* may correspond to oxidative metabolic stress affecting hair follicles.

Both systems recognize the multifactorial nature of hair greying and emphasize the importance of preventive measures such as proper nutrition and stress management.

9. Conclusion

Palitya described in Ayurvedic literature closely resembles the modern concept of premature canities. Integrating Ayurvedic principles with modern dermatological research may contribute to the development of effective preventive and therapeutic strategies.

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