Role of Panchakarma in Chronic Skin Diseases: A Comprehensive Review

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Abstract*—Chronic skin diseases are persistent, relapsing inflammatory disorders that significantly impair physical comfort, psychological well-being, and social functioning. Globally prevalent conditions such as psoriasis, atopic dermatitis, lichen planus, vitiligo, chronic urticaria, and acne vulgaris are increasingly understood as immune-mediated systemic disorders rather than isolated cutaneous pathologies. These diseases involve complex interactions between genetic predisposition, environmental triggers, immune dysregulation, oxidative stress, and alterations in the gut–skin axis. Conventional management strategies primarily rely on corticosteroids, immunosuppressive agents, phototherapy, and biologics. While these approaches may achieve symptomatic control, long-term therapy is often limited by adverse effects, financial burden, and frequent relapse upon discontinuation. Ayurveda classifies chronic dermatological disorders under the broad spectrum of Kushtha, which encompasses a variety of skin diseases characterized by Tridoshic involvement with predominance of Pitta and Kapha, along with Rakta Dushti and impaired Agni. The pathogenesis includes Ama formation, Srotorodha (microchannel obstruction), and deep-seated Dosha-Dushya Sammurchana leading to chronicity. Panchakarma, the classical Shodhana (bio-purificatory) therapy described in authoritative texts such as the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya, is advocated as the principal line of management in chronic and recurrent Kushtha. Panchakarma procedures Vamana, Virechana, Basti, Raktamokshana, and Nasya aim to eliminate vitiated Doshas from their root sites, restore metabolic balance, purify Rakta, and prevent recurrence. Emerging biomedical interpretations suggest that these interventions may exert immunomodulatory, anti-inflammatory, antioxidant, hepatoprotective, and microbiome-modulating effects. Clinical evidence, although limited in scale, indicates improvement in severity indices such as PASI and DLQI scores, reduction in recurrence rates, and decreased dependency on corticosteroids. This comprehensive review integrates classical Ayurvedic doctrine with contemporary immunological and dermatological perspectives to elucidate the therapeutic role of Panchakarma in chronic skin diseases. The review highlights conceptual correlations, available clinical data, limitations of current evidence, and future research directions required to establish Panchakarma as an evidence-based integrative dermatological intervention.

***Index Terms*—Panchakarma, Kushtha, Psoriasis, Virechana, Raktamokshana, Chronic Dermatoses, Immunomodulation, Gut-Skin Axis.**

I. INTRODUCTION

Chronic skin diseases represent a substantial proportion of global non-communicable diseases and are associated with long-term morbidity. Beyond visible cutaneous manifestations, these conditions profoundly affect psychological health, self-esteem, social interaction, and occupational productivity. Psoriasis alone affects millions worldwide and is associated with systemic comorbidities such as metabolic syndrome, cardiovascular disease, and inflammatory arthritis. Similarly, atopic dermatitis is linked with allergic disorders, immune dysfunction, and barrier abnormalities. These observations

reinforce the concept that chronic dermatoses are systemic inflammatory disorders with cutaneous expression. 1

From a biomedical perspective, the pathophysiology of chronic skin diseases involves:

- Persistent activation of immune pathways (Th1, Th2, Th17, and Th22 cells)
- Elevated inflammatory cytokines such as TNF-α, IL-6, IL-17, and IL-23
- Increased oxidative stress and reactive oxygen species
- Dysbiosis of the gut microbiome
- Impaired epithelial barrier function
- Neuro-immunological interactions contributing to pruritus and flare-ups

Although modern dermatology has made significant advances through targeted biologics and immunotherapy, challenges remain. Long-term immunosuppression may predispose to infections and malignancy risk, while abrupt withdrawal often results in rebound exacerbation. Therefore, safe, systemic, and recurrence-preventive therapeutic strategies are required.2

Ayurveda, the traditional system of medicine, offers a fundamentally different framework for understanding chronic skin diseases. The term Kushtha encompasses a broad spectrum of dermatological disorders, described as chronic, recurrent, and Tridoshaja in nature. Classical texts emphasize that Kushtha arises from multifactorial etiologies including incompatible diet (Viruddha Ahara), excessive intake of heavy and sour foods, psychological stress, suppression of natural urges, and hereditary predisposition (Beeja Dosha).3

The pathogenesis begins with Agnimandya (impaired digestive and metabolic fire), leading to Ama formation. Ama interacts with vitiated Doshas—primarily Pitta and Kapha and contaminates Rakta and Mamsa Dhatu. This process results in Srotorodha and localization of pathology in Twak (skin). Chronicity is attributed to incomplete elimination of Doshas and repeated exposure to causative factors.4

In this context, Panchakarma is considered the cornerstone of management for chronic and recurrent skin diseases. Unlike Shamana (palliative) therapy, which suppresses symptoms, Shodhana therapy aims at systemic elimination of vitiated Doshas. Panchakarma involves a sequential process including Purvakarma (preparatory procedures such as Snehana and Swedana), Pradhana Karma (main elimination procedures), and Paschatkarma (post-therapy rehabilitation and Rasayana support).5

Among the five principal procedures:

- Vamana targets Kapha-dominant pathology.
- Virechana eliminates vitiated Pitta and purifies Rakta.
- Basti regulates Vata and modulates systemic physiology through the gut.
- Raktamokshana directly addresses Rakta Dushti and inflammatory congestion.
- Nasya influences supraclavicular and neuro-hormonal pathways.

Recent scientific interest in the gut–skin axis, immune modulation, detoxification pathways, and neuro-immuno-cutaneous interactions provides a plausible explanatory bridge between classical Ayurvedic principles and modern biomedical understanding. For instance, intestinal dysbiosis has been implicated in psoriasis and atopic dermatitis, paralleling the Ayurvedic emphasis on Agni correction and Ama elimination.6

Despite increasing clinical reports and pilot studies demonstrating beneficial outcomes of Panchakarma in psoriasis, eczema, and other chronic dermatoses, systematic evaluation and high-quality randomized trials remain limited. Standardization of protocols, biomarker-based assessments, and long-term follow-up studies are necessary to validate efficacy and safety within evidence-based integrative medicine. 7

This review, therefore, aims to critically examine the role of Panchakarma in chronic skin diseases by integrating classical textual insights with contemporary dermatological science. It seeks to provide a comprehensive academic perspective suitable for researchers, clinicians, and integrative medicine practitioners interested in the systemic management of chronic dermatological disorders. 8

II. AIMS AND OBJECTIVES

Aim

To critically analyze and synthesize classical Ayurvedic concepts and contemporary scientific evidence regarding the role of Panchakarma in the management of chronic skin diseases.

Objectives

1. To review the Ayurvedic pathogenesis (Samprapti) of chronic skin disorders under the spectrum of Kushtha.
2. To evaluate the indications and therapeutic rationale of individual Panchakarma procedures in dermatological conditions.
3. To correlate Panchakarma mechanisms with modern immunological and inflammatory pathways.
4. To assess available clinical evidence supporting Panchakarma interventions in chronic skin diseases.
5. To identify research gaps and propose future directions for integrative dermatological research.

Materials and Methods

Study Design

This study is a narrative comprehensive review integrating classical Ayurvedic literature with contemporary biomedical research related to Panchakarma and chronic dermatological disorders.

Data Sources

Data were collected from:

- Classical Ayurvedic texts including:
  - Charaka Samhita
  - Sushruta Samhita
  - Ashtanga Hridaya
- Indexed biomedical databases such as PubMed, Scopus, Google Scholar, and AYUSH Research Portal.
- Peer-reviewed journals related to dermatology, immunology, integrative medicine, and Ayurvedic clinical research.

Inclusion Criteria

- Clinical studies evaluating Panchakarma interventions in chronic skin diseases.
- Experimental or mechanistic studies explaining immunological or inflammatory modulation.
- Classical textual references explaining Kushtha Chikitsa and Shodhana therapy.
- Observational and interventional studies involving Vamana, Virechana, Basti, or Raktamokshana.

Exclusion Criteria

- Studies lacking clear methodology.
- Case reports without objective outcome measures.
- Non-peer-reviewed anecdotal reports.
- Studies unrelated to chronic dermatological conditions.

Data Analysis

The collected data were analyzed qualitatively. Ayurvedic conceptual frameworks were correlated with biomedical pathophysiological mechanisms. Clinical outcomes were compared based on disease severity indices, recurrence rates, and quality-of-life parameters.

Conceptual Framework of Kushtha in Ayurveda

Nidana (Etiological Factors) 9

- Viruddha Ahara (incompatible food combinations)
- Excessive intake of Guru, Snigdha, Amla, and Lavana Ahara
- Suppression of natural urges
- Psychological stress
- Genetic predisposition (Beeja Dosha)

Samprapti (Pathogenesis)

The pathogenesis involves:

1. Agnimandya leading to Ama formation
2. Vitiation of Tridosha (predominantly Pitta and Kapha)
3. Rakta and Mamsa Dhatu involvement
4. Srotorodha (microchannel obstruction)
5. Localization in Twak

Chronicity develops when Doshas become deeply seated and repeatedly accumulate.

Chronic Skin Diseases: Ayurvedic and Biomedical Correlation 10

Psoriasis (Ekakushtha)

Characterized by:

- Aswedanam (absence of sweating)
- Mahavastu (extensive lesions)
- Matsyashakalopama (scaly appearance)

Biomedical correlation includes hyperproliferation of keratinocytes and Th17-mediated inflammation.

Atopic Dermatitis (Vicharchika) 11

Features:

- Kandu (itching)
- Srava (oozing)
- Pidaka (papules)

- Shyava varna (hyperpigmentation)

Correlates with IgE-mediated hypersensitivity and barrier dysfunction.

Lichen Planus

Often associated with Pitta-Rakta vitiation and autoimmune inflammatory processes.

Vitiligo (Shwitra)

Involves vitiation of Pitta and Rakta with Dhatu kshaya. Biomedical understanding points to autoimmune melanocyte destruction.

Rationale of Panchakarma in Chronic Skin Diseases

Panchakarma is based on the principle that elimination of vitiated Doshas prevents recurrence and promotes long-term remission. Unlike symptomatic palliation (Shamana), Shodhana aims at root-level correction. 12

The therapeutic strategy includes:

- Deepana-Pachana to correct Agni
- Snehana and Swedana for Dosha mobilization
- Elimination through specific Shodhana procedures
- Post-procedural Rasayana for tissue rejuvenation

Major Panchakarma Procedures in Dermatology

Vamana (Therapeutic Emesis)

Indicated in Kapha-dominant skin disorders with thickening, scaling, and oozing. By eliminating Kapha and Ama from the upper gastrointestinal tract, Vamana reduces systemic inflammatory load. 13

Probable biomedical effects include:

- Reduction in pro-inflammatory mediators
- Modulation of gut-associated lymphoid tissue
- Correction of metabolic endotoxemia

Virechana (Therapeutic Purgation)

Virechana is considered the most important Shodhana for Pitta-Rakta predominant disorders. It eliminates vitiated Pitta through the hepatobiliary route and purifies Rakta. 14

Potential mechanisms:

- Regulation of hepatic detoxification pathways
- Reduction in oxidative stress
- Downregulation of inflammatory cytokines
- Improvement in lipid metabolism

Clinical studies have demonstrated reduction in Psoriasis Area and Severity Index (PASI) scores following classical Virechana protocols.

Basti (Medicated Enema)

Though primarily indicated for Vata disorders, Basti plays a crucial role in chronic dermatoses with dryness and fissuring. It exerts systemic effects through rectal mucosal absorption. 15

Biomedical correlations:

- Gut microbiota modulation
- Immune system recalibration
- Enhancement of short-chain fatty acid production
- Neuro-immuno-endocrine regulation

Raktamokshana (Bloodletting)

Raktamokshana is specifically indicated in Rakta-Dushti conditions. Jalaukavacharana (leech therapy) is particularly useful in inflammatory dermatoses. 16

Possible mechanisms:

- Removal of inflammatory metabolites
- Hirudin-mediated anticoagulant and anti-inflammatory action
- Improved microcirculation
- Reduction of localized congestion

Several small-scale clinical studies report symptomatic relief in eczema and psoriasis following Raktamokshana.

Nasya

Nasya is beneficial in scalp psoriasis, facial dermatoses, and stress-related exacerbations. It may influence neuro-hormonal pathways involved in inflammatory responses.

Mechanistic Insights: Integrative Perspective

Understanding the role of Panchakarma in chronic skin diseases requires a multidimensional analysis integrating Ayurvedic pathophysiology with contemporary immunology, molecular biology, and systems medicine. Chronic dermatoses such as psoriasis, atopic dermatitis, and lichen planus are not merely epidermal disorders; they represent systemic inflammatory syndromes characterized by immune dysregulation, metabolic imbalance, oxidative stress, neuroendocrine disturbance, and microbiome alterations. The classical Ayurvedic constructs of Ama, Agnimandya, Rakta Dushti, and Srotorodha can be interpreted through these modern frameworks. 17

1. Agni, Ama, and Systemic Inflammation

In Ayurveda, impaired digestive and metabolic fire (Agnimandya) leads to the formation of Ama—a toxic, incompletely metabolized byproduct that circulates systemically and obstructs microchannels (Srotas). 18

From a biomedical standpoint, this concept parallels:

- Increased intestinal permeability ("leaky gut")
- Circulating endotoxins (lipopolysaccharides)
- Chronic low-grade inflammation
- Elevated pro-inflammatory cytokines

Emerging research demonstrates that endotoxemia contributes to Th17-mediated inflammation in psoriasis. Panchakarma procedures such as Virechana and Basti aim to restore Agni and eliminate Ama, potentially reducing systemic inflammatory load and improving gut barrier integrity. 19

2. Gut–Skin Axis Modulation

The gut–skin axis describes bidirectional communication between intestinal microbiota and cutaneous immune responses. Dysbiosis alters short-chain fatty acid production, immune tolerance, and T-cell differentiation. 20

Basti therapy may exert immunological influence through:

- Rectal mucosal absorption of medicated decoctions and oils
- Modulation of gut microbiota composition
- Enhancement of mucosal immunity
- Reduction of intestinal permeability

Virechana may additionally influence bile acid metabolism and microbial diversity, both of which regulate systemic inflammation. Restoration of microbiome balance could downregulate inflammatory cytokines implicated in psoriasis (IL-17, IL-23) and eczema (IL-4, IL-13). 21

Thus, Panchakarma interventions align closely with modern microbiome-based therapeutic concepts.

3. Immunomodulatory Mechanisms

Chronic skin diseases involve dysregulated immune pathways:

- Psoriasis: Th1/Th17 axis predominance
- Atopic dermatitis: Th2-mediated inflammation
- Lichen planus: Cytotoxic T-cell activity

Ayurveda attributes these to Dosha vitiation, particularly Pitta (inflammation) and Kapha (proliferation and thickening). 22

Virechana and Raktamokshana may contribute to immunomodulation by:

- Reducing circulating inflammatory mediators
- Modulating cytokine expression
- Enhancing antioxidant enzyme activity
- Improving hepatic detoxification pathways

Leech therapy (Jalaukavacharana) introduces bioactive molecules such as hirudin and eglins, which exhibit anti-inflammatory and anticoagulant effects. These actions may reduce local inflammatory cascades and microvascular dysfunction in psoriasis plaques. 23

4. Oxidative Stress Reduction

Oxidative stress is a key contributor to chronic dermatoses. Increased reactive oxygen species (ROS) damage keratinocytes, disrupt barrier function, and perpetuate inflammation. 24

Ayurvedic Shodhana therapies are traditionally followed by Rasayana interventions that enhance tissue rejuvenation and antioxidant capacity. Panchakarma may reduce oxidative stress by:

- Eliminating pro-oxidant metabolites
- Enhancing endogenous antioxidant defense systems
- Improving mitochondrial efficiency through metabolic correction

This aligns with studies showing reduced malondialdehyde levels and improved antioxidant enzyme activity following detoxification therapies.

5. Hepato-Dermatological Correlation

Ayurveda emphasizes the close relationship between Pitta, Rakta, and Yakrit (liver). Many chronic dermatoses demonstrate association with metabolic syndrome, dyslipidemia, and non-alcoholic fatty liver disease. 25

Virechana, targeting Pitta elimination through the hepatobiliary system, may:

- Improve liver function
- Enhance bile secretion
- Regulate lipid metabolism
- Reduce systemic inflammatory mediators

Modern research supports the concept that hepatic inflammation and metabolic dysfunction amplify

systemic immune responses, thereby influencing cutaneous disease severity.

6. Microcirculation and Raktamokshana

Psoriasis and eczema involve microvascular dilation, angiogenesis, and inflammatory infiltration. Raktamokshana may improve:

- Local tissue oxygenation
- Removal of inflammatory mediators
- Reduction of vascular congestion
- Improvement of microcirculatory dynamics

Leech saliva contains vasodilatory and anti-inflammatory peptides that may modulate local immune responses and reduce erythema. 26

7. Neuro-Immunological Regulation

Stress significantly exacerbates chronic skin diseases via hypothalamic–pituitary–adrenal (HPA) axis dysregulation. Elevated cortisol fluctuations, sympathetic overactivity, and neuropeptide release contribute to inflammation and pruritus. 27

Ayurvedic texts recognize psychological stress (Chinta, Krodha, Bhaya) as etiological factors in Kushtha. Panchakarma, particularly through Snehana, Swedana, and Nasya, may:

- Promote parasympathetic dominance
- Reduce stress hormone levels
- Enhance mind–body balance
- Improve sleep and psychological resilience

This corresponds with psychoneuroimmunology, where stress reduction leads to measurable improvement in inflammatory markers.

8. Epigenetic and Metabolic Reset Hypothesis

An emerging integrative hypothesis proposes that Panchakarma may induce a “metabolic reset.” Periods of controlled dietary restriction, oleation, and elimination may influence:

- Gene expression patterns
- Epigenetic modulation of inflammatory genes
- Insulin sensitivity
- Lipid metabolism

Although empirical evidence is limited, detoxification and metabolic recalibration are increasingly recognized in lifestyle medicine as tools for systemic inflammation control. 28

Clinical Evidence Overview

Available studies suggest:

- Significant reduction in disease severity indices post-Shodhana
- Decrease in recurrence rate when Panchakarma is followed by Rasayana
- Improved Dermatology Life Quality Index (DLQI) scores
- Reduction in steroid dependency

However, limitations include small sample sizes, lack of blinding, and heterogeneity in protocols.

III. DISCUSSION

Chronic skin diseases represent a complex interplay between immune dysregulation, metabolic disturbance, genetic susceptibility, environmental triggers, and psychosocial stressors. Contemporary dermatology recognizes these disorders as systemic inflammatory diseases with cutaneous manifestations rather than purely localized skin abnormalities. This systemic understanding aligns closely with the Ayurvedic concept of Kushtha, wherein Tridoshic imbalance, particularly of Pitta and Kapha, along with Rakta Dushti and Agnimandya, forms the core pathophysiological basis. 29

IV. PANCHAKARMA AS A SYSTEMIC INTERVENTION

The distinguishing feature of Panchakarma is its systemic detoxificatory approach. Unlike topical or suppressive therapies, Shodhana aims at eliminating vitiated Doshas from their principal sites, thereby preventing re-accumulation and recurrence. Chronic skin diseases are described as Bahudosha Avastha (state of accumulated Doshas), making them classical indications for Shodhana therapy. 30

In psoriasis and lichen planus conditions that exhibit erythema, scaling, and inflammatory plaques Pitta-Rakta predominance is evident. Virechana directly addresses this pathology by eliminating vitiated Pitta via the hepatobiliary route. From a biomedical perspective, the liver plays a crucial role in cytokine metabolism, lipid regulation, and detoxification. Therapeutic purgation may influence bile acid metabolism, reduce oxidative stress, and modulate inflammatory mediators such as TNF-α and IL-17, which are central to psoriatic inflammation.31

Raktamokshana, particularly Jalaukavacharana (leech therapy), demonstrates relevance in inflammatory dermatoses with localized congestion and erythema. Leech saliva contains bioactive compounds including hirudin, calin, and bdellins, which possess anticoagulant, anti-inflammatory, and vasodilatory properties. These mechanisms may explain clinical improvements in eczema and psoriasis characterized by microvascular changes and inflammatory infiltration.32

Gut–Skin Axis and Basti

Recent advances in immunology emphasize the gut–skin axis, recognizing that intestinal dysbiosis contributes to systemic inflammation and cutaneous flare-ups. Increased intestinal permeability allows endotoxins to enter systemic circulation, promoting chronic inflammatory states. This concept parallels the Ayurvedic doctrine of Ama formation and Agnimandya.33

Basti therapy, though classically indicated for Vata disorders, exerts profound systemic effects. The rectal mucosa permits rapid absorption of bioactive compounds, influencing immune regulation, autonomic balance, and microbiota composition. Experimental data suggest that modulation of gut microbiota reduces systemic inflammatory markers and improves immune tolerance. Thus, Basti may contribute to long-term remission in chronic dermatoses by restoring gut homeostasis. 34

Neuro-Immuno-Cutaneous Interaction

Stress is a well-established trigger for exacerbation of psoriasis, eczema, and urticaria. Neurogenic inflammation mediated through substance P, cortisol dysregulation, and sympathetic overactivity contributes to disease severity. Ayurvedic literature emphasizes Manasika Nidana (psychological etiological factors) in Kushtha. 35

Nasya therapy may influence central neuro-hormonal pathways via olfactory and trigeminal stimulation, potentially modulating stress responses and inflammatory cascades. The concept of mind–body interaction in Ayurveda aligns with psychoneuroimmunology, where stress reduction directly influences immune homeostasis. 36

Prevention of Recurrence

One of the major limitations of conventional therapy is relapse following discontinuation. Panchakarma addresses recurrence by removing Doshas at their root and correcting Agni. The sequential approach of Deepana–Pachana, Snehana, Swedana, followed by Shodhana ensures mobilization and complete elimination of morbid Doshas. Post-procedural Rasayana therapy enhances tissue repair, antioxidant defense, and immune regulation, thereby reducing recurrence rates.37

Clinical observations suggest that patients undergoing classical Virechana followed by Rasayana demonstrate prolonged remission compared to those receiving only Shamana therapy. Improvement in Dermatology Life Quality Index (DLQI) scores indicates not only physical but psychosocial benefit.38

Evidence Gaps and Methodological Challenges

Despite promising outcomes, current evidence remains limited by:

- Small sample sizes
- Lack of standardized Panchakarma protocols
- Variability in Purvakarma and Paschatkarma procedures
- Absence of objective biomarkers (e.g., cytokine profiling)
- Short follow-up duration

There is a pressing need for multicentric randomized controlled trials comparing Panchakarma with conventional therapies or integrative models. Inclusion of laboratory markers such as CRP, IL-17, IL-23, and oxidative stress parameters would strengthen mechanistic validation.

Integrative Dermatology Perspective

The future of chronic dermatology may lie in integrative models combining evidence-based biomedical interventions with systemic detoxificatory and immunomodulatory approaches. Panchakarma, when administered judiciously with proper patient selection (Rogi Bala, Roga Bala, Agni status), can serve as a complementary therapy that reduces drug dependency and enhances long-term outcomes.39

Safety considerations are critical. Panchakarma must be individualized and performed under trained supervision, especially in patients with comorbidities. Standard operating procedures and clinical guidelines are essential to ensure reproducibility and safety.40

V. CONCLUSION

Chronic skin diseases are systemic inflammatory disorders characterized by immune dysregulation,

metabolic disturbance, and recurrent exacerbations. The Ayurvedic concept of Kushtha provides a holistic understanding that integrates digestive, hematological, immunological, and psychological factors. Panchakarma, as a Shodhana-based therapeutic modality, addresses the root pathogenesis through Dosha elimination, Rakta purification, Agni correction, and restoration of systemic equilibrium. Among the various procedures, Virechana demonstrates significant relevance in Pitta-Rakta predominant conditions such as psoriasis and lichen planus, while Raktamokshana offers targeted benefit in inflammatory and congestive dermatoses. Basti contributes to gut-mediated immune regulation, and Nasya may influence neuro-immunological pathways. Although preliminary clinical evidence supports the beneficial role of Panchakarma in reducing severity and recurrence, robust scientific validation remains necessary. Future research should focus on standardized protocols, biomarker-based outcome assessment, long-term follow-up, and integrative comparative trials. In conclusion, Panchakarma holds substantial potential as a systemic, preventive, and integrative therapeutic strategy in chronic dermatology. When implemented with proper clinical judgment and scientific rigor, it may complement conventional management and contribute to sustainable remission in chronic skin diseases.

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