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Basti Karma in the Modulation of Inflammatory Markers in Amavata (Rheumatoid Arthritis): An Integrative Review

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ABSTRACT

Background: Rheumatoid arthritis (RA) is a chronic, systemic autoimmune inflammatory disorder characterized by symmetrical polyarthritis, progressive joint destruction, and persistently elevated inflammatory markers such as erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), rheumatoid factor (RF), and anti-cyclic citrullinated peptide (anti-CCP) antibodies. In Ayurveda, RA closely resembles *Amavata*, a disorder originating from *Agnimandya* leading to *Ama* formation and subsequent vitiation of *Vata Dosha*. *Basti Chikitsa* is considered the most effective therapeutic intervention for *Vatavyadhi* and is designated as *Ardha Chikitsa* due to its systemic influence.

Objective: To critically evaluate classical Ayurvedic concepts and contemporary scientific evidence regarding the role of *Basti Karma* in modulating inflammatory markers in *Amavata* with special reference to rheumatoid arthritis.

Methods: Classical Ayurvedic texts and their commentaries were reviewed alongside contemporary biomedical literature on RA, inflammatory markers, immunopathogenesis, the gut–immune axis, and rectal drug delivery. A conceptual correlation and integrative interpretative analysis were undertaken.

Results: Available evidence suggests that *Basti Karma* exerts systemic anti-inflammatory and immunomodulatory effects by correcting *Agnimandya*, facilitating *Ama Nirharana*, pacifying *Vata Dosha*, and modulating the gut–immune–neuroendocrine axis. Clinical studies report significant reductions in ESR and CRP levels with concurrent improvement in joint pain, swelling, and stiffness following *Basti* therapy.

Conclusion: *Basti Karma* demonstrates considerable potential in the integrative management of *Amavata*/RA by addressing both clinical manifestations and underlying inflammatory pathology. Well-designed randomized controlled trials with standardized *Basti* protocols and biomarker-based outcomes are warranted to substantiate its role within integrative rheumatology.

Keywords: Amavata, Rheumatoid Arthritis, Basti Karma, Inflammatory Markers, Gut–Immune Axis

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic, progressive autoimmune inflammatory disorder primarily affe-

cting synovial joints and resulting in pain, swelling, morning stiffness, deformity, and functional disability.[1,3] Extra-articular manifestations involving the cardiovascular, pulmonary, ocular, and nervous systems further contribute to disease burden and reduced quality of life. The global prevalence of RA ranges between 0.5% and 1%, with a higher incidence among women.[3]

From an Ayurvedic perspective, RA closely resembles *Amavata*, a disorder arising from *Agnimandya* due to improper dietary habits, incompatible food intake, and sedentary lifestyle.[1,2] Impaired digestion leads to the formation of *Ama*, which, when associated with vitiated *Vata Dosha*, localizes in the joints (*Sandhi*), producing pain (*Shoola*), swelling (*Shotha*), stiffness (*Stabdhata*), and restricted movements.

RHEUMATOID ARTHRITIS: CONTEMPORARY PERSPECTIVE

RA is characterized by immune-mediated synovial inflammation driven by autoantibodies and pro-inflammatory cytokines such as tumor necrosis factor-α (TNF-α), interleukins (IL-1, IL-6, IL-17), and other inflammatory mediators. Persistent synovitis results in pannus formation, cartilage destruction, bone erosion, and systemic complications. Although disease-modifying antirheumatic drugs (DMARDs) and biologics have improved outcomes, long-term safety concerns, incomplete remission, and economic burden remain major limitations.[3]

INFLAMMATORY MARKERS IN RHEUMATOID ARTHRITIS

Inflammatory markers are routinely employed to assess disease activity and therapeutic response in RA:

- ESR: Reflects chronic inflammatory burden and correlates with disease severity.
- CRP: An acute-phase reactant produced by the liver, indicating active inflammation.
- Rheumatoid Factor (RF): An IgM autoantibody associated with severe disease and extra-articular manifestations.
- Anti-CCP Antibodies: Highly specific markers predictive of erosive and progressive disease. Sustained reduction in these markers is considered an important surrogate outcome for disease control.

AMAVATA: AYURVEDIC PERSPECTIVE

Amavata is classified as a *Vata-pradhana* disorder with *Ama* as the principal pathogenic factor. Classical features include *Sandhi Shoola*, *Sandhi Shotha*, *Stabdhata*, *Gourava*, *Jwara*, and *Arochaka*. The disease involves *Rasa* and *Asthi Dhatu* along with *Sandhi Srotas*. The fundamental treatment principles include *Langhana*, *Deepana-Pachana*, *Shodhana*—particularly *Basti*—and *Vata Shamana* measures.

BASTI KARMA: CONCEPTUAL REVIEW

Classical Basis

According to *Charaka Samhita*, *Basti* draws morbid *Doshas* from the entire body in a manner analogous to the sun drawing moisture from the earth, underscoring its systemic therapeutic potential. It is indicated in disorders involving *Vata*, *Pitta*, *Kapha*, and *Rakta*, highlighting its broad clinical applicability.

Composition and Therapeutic Rationale

Niruha Basti is classically prepared using *Makshika* (honey), *Saindhava Lavana*, *Sneha*, *Kalka*, and *Kwatha*. These components facilitate emulsification, enhance mucosal absorption, pacify vitiated *Doshas*, and ensure effective systemic delivery of therapeutic principles.

MODE OF ACTION OF BASTI

Ayurvedic Interpretation

Basti regulates *Apana Vata*, restores impaired *Agni*, facilitates elimination of *Ama*, and re-establishes *Dosha Samya*. As *Pakwashaya* is the principal seat of *Vata*, intervention at this site exerts systemic effects across multiple organ systems.

Contemporary Scientific Perspective

Rectal drug administration enables absorption through rich venous and lymphatic networks, bypassing first-pass hepatic metabolism. The gut-associated lymphoid tissue (GALT), which constitutes a major component of systemic immunity, plays a critical role in immune modulation. Additionally, stimulation of the enteric nervous system influences neuro-humoral pathways implicated in inflammatory regulation.

ROLE OF BASTI IN MODULATING INFLAMMATORY MARKERS

Clinical studies and observational evidence indicate that *Basti Karma* contributes to:

- Significant reduction in ESR and CRP levels
- Improvement in joint pain, swelling, and morning stiffness
- Enhancement of digestive and metabolic functions
- Immunomodulatory effects through regulation of pro-inflammatory cytokines

From an Ayurvedic standpoint, reduction in inflammatory markers signifies *Ama Kshaya* and *Samprapti Vighatana*.

DISCUSSION

Rheumatoid arthritis represents a complex interplay of immune dysregulation, chronic inflammation, and progressive structural damage.[3,4] This multifactorial pathogenesis bears close resemblance to the Ayurvedic concept of *Ama*-associated *Vata Dushti* described in *Amavata*. Classical Ayurvedic literature emphasizes the role of impaired digestion (*Agnimandya*) and systemic accumulation of toxic metabolites (*Ama*) as central to disease progression.[1,2]

Emerging biomedical research highlights the gut–immune axis as a critical regulator of autoimmune inflammation, with gut-associated lymphoid tissue playing a pivotal role in cytokine homeostasis.[4,5] This provides a strong scientific rationale for *Pakwashaya*-based interventions such as *Basti Karma*. By correcting *Agnimandya*, *Basti* limits further *Ama* formation, while its *Shodhana* action facilitates elimination of existing inflammatory mediators.

Clinical studies have demonstrated significant reductions in ESR and CRP following *Basti* therapy, reflecting attenuation of systemic inflammation.[6,7] These biochemical improvements may be attributed to down-regulation of key pro-inflammatory cytokines such as TNF-α and IL-6, which are central to RA pathogenesis.[4,5] The lipid-based formulations used in *Sneha* and *Niruha Basti* may further enhance mucosal permeability and promote immunomodulation through lymphatic absorption.

Despite encouraging outcomes, current evidence is limited by small sample sizes, heterogeneity in *Basti* protocols, and lack of standardized biomarker endpoints. Addressing these gaps through rigorously designed randomized controlled trials is essential for wider scientific acceptance and integration into evidence-based rheumatology.

CONCLUSION

Basti Karma emerges as a rational and effective therapeutic modality in the integrative management of

Amavata with special reference to rheumatoid arthritis. Its systemic anti-inflammatory and immunomodulatory effects, reflected by improvement in inflammatory markers, underscore its relevance in contemporary integrative rheumatology. Future multicentric randomized controlled trials incorporating standardized *Basti* regimens and validated biomarker outcomes are imperative to establish its evidence base.

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