A Comprehensive Review on Role of Ayurveda in the Management of Ankylosing Spondylitis

Dr. Vaibhav Prashant Jaybhaye[1], Dr Ashish C Zanwar[2]

[1]Assistant Professor, Dept. of Rasashastra & Bhaishajya Kalpana, Indutai Gaikwad Patil Ayurved College, Nagpur

[2]Assistant Professor, Dept. of Kayachikitsa, Sau Shantadevi V Patil Ayurved College, Hatta, Dist. Hingoli

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ABSTRACT

Background: Ankylosing Spondylitis (AS) is a chronic, progressive autoimmune spondyloarthropathy characterized by axial inflammation and potential bony ankylosis. Despite the efficacy of modern biological, challenges regarding cost, accessibility, and long-term safety persist. This review systematically evaluates the role of Ayurvedic interventions—focusing on *Panchakarma* and herbo-mineral formulations—in managing AS symptoms and slowing radiological progression.

Materials and Methods: A systematic search of electronic databases (PubMed, AYUSH Research Portal, and Google Scholar) was conducted for studies published between 2010 and 2026. Inclusion criteria focused on clinical trials and case series evaluating Ayurvedic protocols, specifically those utilizing the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and Functional Index (BASFI) as primary outcome measures.

Results: Synthesis of the literature indicates that multi-modal Ayurvedic therapy—comprising *Deepana-Pachana* (metabolic regulation), *Virechana* (purgation), and *Vaitarana Basti* (medicated enema)—leads to a statistically significant reduction in BASDAI scores (ranging from 30% to 50% improvement). Evidence suggests that *Guggulu*-based formulations and *Boswellia serrata* act as potent NF-κB and 5-LOX inhibitors, providing a biochemical basis for reduced synovial inflammation. Furthermore, integrated protocols were associated with improved spinal mobility and a reduction in the required dosage of conventional NSAIDs. **Conclusion:** Ayurveda offers a comprehensive, disease-modifying approach to Ankylosing Spondylitis by addressing the "Gut-Joint Axis" and systemic Vata imbalance. While current clinical data is promising, standardized large-scale Randomized Controlled Trials (RCTs) are essential to establish Ayurveda as a primary or adjunctive standard of care in global rheumatology.

Keywords: Ankylosing Spondylitis, Ayurveda, Panchakarma, Basti, HLA-B27, Amavata, Inflammation, Systematic Review.

INTRODUCTION

Ankylosing Spondylitis is a seronegative spondyloarthropathy characterized by inflammation of the sacroiliac joints and the spine, strongly associated with the HLA-B27 antigen. Over time, this leads to syndesmophyte formation and bony ankylosis, resulting in the "Bamboo Spine" appearance.[1]

In Ayurveda, the clinical presentation of AS closely correlates with Amavata and Asthi-Maja Gata Vata. The Ayurvedic perspective posits that the pathogenesis begins with Mandagni (impaired digestion), leading to the formation of Ama (undigested toxic metabolites). This Ama circulates and settles in the Sandhis (joints), triggered by an aggravated Vata Dosha.[2]

New imaging techniques and therapies have substantially changed the management of this disease in the past decade. Whether inhibition of radiographic progression and structural damage can be reached with available drugs is as yet unclear. Furthermore, treatment with non-steroidal anti-inflammatory agents and physiotherapy remains an important approach to long-term management of patients with ankylosing spondylitis. The new

treatment options with tumour necrosis factor blockers seems a breakthrough for patients refractory to conventional treatment.[3]

Modern rheumatology has validated the gut-joint axis, finding that up to 60-70% of ankylosing spondylitis (AS) patient's exhibit subclinical gut inflammation or dysbiosis. Ayurveda's traditional focus on treating the gut (Kostha) to resolve joint pain parallels these findings, specifically targeting "Agni" (digestive fire) and removing "Ama" (toxins).[4]

MATERIALS AND METHODS

Search Strategy and Data Sources

A systematic search was conducted across electronic databases, including **PubMed**, **Ayush Research Portal**, **DHARA**, **Google Scholar**, and **Cochrane Library**. The search encompassed articles published from January 2010 to March 2026. The following Boolean search strings were utilized:

- ("Ankylosing Spondylitis" OR "Axial Spondyloarthritis") AND ("Ayurveda" OR "Panchakarma")
- ("Amavata" OR "Katigraha") AND ("Guggulu" OR "Basti")
- ("HLA-B27") AND ("Integrative Medicine")

Selection Criteria

Articles were screened based on the following inclusion and exclusion criteria:

- **Inclusion Criteria:** Clinical trials (RCTs and non-RCTs), case series with more than five patients, systematic reviews, and pharmacological studies on Ayurvedic herbs related to AS.
- **Exclusion Criteria:** Studies involving non-human subjects, single-case reports with insufficient follow-up, and articles not available in English or translated Sanskrit.

Study Selection and Data Extraction

Initial screening involved 142 titles, out of which 45 abstracts were reviewed. A total of 18 studies met the rigorous criteria for inclusion in this review. Data were extracted regarding the intervention duration, the specific Panchakarma procedures used, and the primary outcomes measured (BASDAI and BASFI).

Clinical Assessment Parameters (Ayurvedic & Modern)

To bridge the diagnostic gap, the review utilized a dual-metric assessment:

1. **Modern Metrics:** Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) for disease activity and Bath Ankylosing Spondylitis Functional Index (BASFI) for physical function.
2. **Ayurvedic Metrics:** Grading of *Stambha* (stiffness), *Shoola* (pain), and *Agni* (digestive capacity) based on classical Ayurvedic scales (*Dashavidha Pariksha*).

Intervention Analysis

Samprapti [5]

1. Nidana Sevana

Consumption of Vata-aggravating foods (cold, dry, light), irregular lifestyle, and factors that deplete Ojas or suppress natural urges lead to the initial weakening of **Jatharagni**.

2. Ama Utpatti

Due to weakened digestion, improperly processed food turns into **Ama** (unmetabolized toxic byproduct). This *Ama* is heavy and sticky, circulating through the *Rasavaha Srotas*.

3. Srotobandha

The circulating Ama combines with aggravated Vata (**Sama Vata**). This complex settles in the "Khavaigunya" (pre-existing weak areas), which in AS is typically the **Trika Sandhi** (Sacroiliac joints). It blocks the microscopic channels (Srotas) that nourish the bone tissues.

4. Dhatu Kshaya & Soshana

Because the channels are blocked, the **Asthi Dhatu** (bone) and **Majja Dhatu** (marrow) do not receive adequate nourishment.

- The dry (*Ruksha*) and cold (*Sheeta*) qualities of *Vata* begin to "dry up" the essential synovial fluids and the soft intervertebral structures.
- This leads to **Sandhi-Stambha** (joint stiffness).

5. Vikalpa Samprapti[6]

In the advanced stages, the body attempts to stabilize the "weakened" bone by depositing calcium pathologically—this is the Ayurvedic equivalent of **Syndesmophyte** formation. The *Vata* pushes the *Kapha* and *Asthi* elements into abnormal growth, resulting in the "Bamboo Spine" appearance, or **Pristha-Vamsha Gatatva**.

The methodologies of the reviewed studies typically followed a phased approach:

- **Deepana-Pachana Phase:** Administration of *Chitrakadi Vati* or *Amapachana Vati* for 3–7 days to correct metabolic errors.
- **Snehana-Swedana Phase:** External application of *Brihat Saindhavadya Taila* followed by *Nadi Sweda*.
- **Basti Karma:** A 16-day cycle of *Kala Basti*, alternating between *Vaitarana Basti* (Niruha) and *Dhanwantara Taila* (Anuvasana) (14).

Synthesis of the gathered data indicates that integrated Ayurvedic management results in a statistically significant reduction in morning stiffness duration compared to baseline. Specifically, the combination of *Basti* and *Guggulu*-based formulations showed a 30-45% improvement in spinal flexion (Schober's Test) over a 12-week period .

Shodhana Therapy (Panchakarma)[7]

1. Virechana (Therapeutic Purgation): Administered to clear systemic Ama and balance Pitta, reducing the acute inflammatory phase .
2. Basti (Medicated Enemas): Considered the "Gold Standard" for AS. Specifically, Vaitarana Basti and Anuvasana Basti help in restoring joint lubrication and reducing bone marrow edema by acting on the colon—the primary seat of Vata .

Shamana Chikitsa (Internal Medicine)[8]

Herbo-mineral formulations are utilized for their immunomodulatory properties:

1. Guggulu (Commiphora mukul): Contains Guggulsterones, which inhibit NF-κB, a key regulator of the inflammatory response .

2. Shallaki (Boswellia serrata): A natural 5-LOX inhibitor that preserves cartilage and reduces joint swelling .

3. Rasna Saptak Kwatha: Frequently used for Katigraha (low back stiffness) to improve nerve conduction and reduce localized pain .

Pathyapathya [9]

Pathya	Apathya
Grains: Old rice, barley, and garlic-infused preparations.	**Heavy Foods:** Curd, refined flour, and excessive sweets.
Spices: Ginger, turmeric, and cumin to stimulate *Agni* (digestive fire).	**Incompatible Foods:** Fish with milk or excessive fermented foods.
Hydration: Warm water to assist in the digestion of *Ama*.	**Lifestyle:** Day sleeping and exposure to cold, damp drafts.

DISCUSSION

Clinical Efficacy and Validation of Both Indices

Recent clinical data from 2024 and 2025 has demonstrated a robust correlation between multi-modal Ayurvedic therapy and standard rheumatological outcome measures. In a landmark case series, patients undergoing intensive *Panchakarma* (specifically *Basti* and *Kizhi*) showed a **52% reduction in BASDAI** and a **58% improvement in BASFI** scores. For instance, baseline BASDAI scores of 7.0 were observed to decrease to 3.0 following a 15-day protocol of *Kala Basti* and *Patra Pinda Sweda*, indicating a significant shift from "high disease activity" to "moderate-to-low activity".[10-13]

Gut-Joint Axis and the "Ama" Hypothesis [14]

The concept of *Ama* (metabolic toxins) as the primary driver of *Amavata* finds strong parallels in the emerging "Gut-Joint Axis" theory of modern rheumatology. Approximately 70% of AS patients exhibit subclinical gut inflammation and dysbiosis . Recent discussions highlight that **Basti therapy** (specifically *Kshar Basti* and *Erandmooladi Basti*) may act by:

1. **Restoring Gut Barrier Function:** Correcting "leaky gut" and preventing the translocation of bacterial peptides like LPS into the systemic circulation.

2. **Modulating Th17 Response:** By stabilizing the gut microbiome, *Basti* may indirectly down regulate the IL-23/IL-17 axis, which is the primary pathological driver of AS.

The management of AS remains a challenge due to the risk of spinal fusion. While TNF-alpha inhibitors are effective, they are cost-prohibitive and carry risks of immune suppression. Ayurvedic protocols offer a dual-action mechanism. Firstly, Srotoshodhana (channel clearing) through Swedana (fomentation) improves microcirculation in the spinal ligaments, potentially delaying syndesmophyte formation. Secondly, the use of Rasayana (rejuvenative) herbs like Ashwagandha (Withania somnifera) helps in modulating the overactive immune response without complete suppression.[15]

Clinical observations suggest that patients undergoing integrated Ayurvedic care show significant reduction in BASDAI (Bath Ankylosing Spondylitis Disease Activity Index) scores and improved BASFI (Functional Index) markers. This suggests that Ayurveda does not just provide analgesia but improves the actual functional capacity of the spine.[16]

CONCLUSION

Ayurvedic intervention provides a sustainable, long-term strategy for AS. By correcting metabolic errors (Agni) and employing targeted detoxification with Basti and virechan, it addresses the systemic nature of the disease. Future research should focus on longitudinal radiological studies to quantify the rate of spinal fusion inhibition under Ayurvedic care.

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