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BRIHATI: A TRADITIONAL ANTI-INFLAMMATORY HERB WITH BROAD THERAPEUTIC POTENTIAL

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ABSTRACT

Inflammation is a fundamental pathological process underlying a wide spectrum of acute and chronic diseases. Traditional medical systems, particularly Ayurveda, emphasize the use of plant-based remedies to modulate inflammatory responses and restore physiological balance. Brihati (*Solanum indicum* Linn.), a well-known drug of the Dashamoola group, has been extensively described in classical Ayurvedic texts for its effectiveness in inflammatory, respiratory, musculoskeletal, and visceral disorders. This article explores the anti-inflammatory and related pharmacological actions of Brihati through Ayurvedic concepts and available experimental evidence. Emphasis is given to its classical properties, therapeutic indications, and possible mechanisms of action, highlighting its relevance in contemporary healthcare.

KEYWORDS: Brihati, *Solanum indicum*, inflammation, Dashamoola, Shotha, Ayurveda, anti-inflammatory herbs

INTRODUCTION

Inflammation (*Shotha*) is a protective biological response triggered by tissue injury, infection, or metabolic imbalance. While acute inflammation is beneficial, chronic inflammation contributes to disorders such as arthritis, asthma, inflammatory bowel disease, and cardiovascular ailments. Conventional anti-inflammatory drugs are effective but often associated with adverse effects during long-term use. This has led to renewed interest in traditional medicinal plants with safer therapeutic profiles.

Brihati, botanically identified as *Solanum indicum* Linn. (family Solanaceae), is a prickly perennial shrub widely distributed across India. It is one of the ten roots forming *Dashamoola*, a classical Ayurvedic group widely prescribed for inflammatory and pain-related conditions. The repeated mention of Brihati in ancient texts underscores its importance as a potent anti-inflammatory and disease-modifying drug.

Ayurvedic Perspective of Brihati

According to Ayurveda, Brihati possesses the following pharmacodynamic attributes:

- **Rasa (Taste):** Katu (pungent), Tikta (bitter)
- **Guna (Qualities):** Laghu (light), Ruksha (dry), Tikshna (sharp)
- **Virya (Potency):** Ushna (hot)
- **Vipaka (Post-digestive effect):** Katu

These properties make Brihati especially effective in alleviating Vata and Kapha dosha aggravation, which are primary contributors to inflammatory and obstructive conditions. Classical texts describe Brihati as *Shothahara* (anti-inflammatory), *Vedanasthapana* (analgesic), and *Shwasahara* (relieves dyspnea).

From an Ayurvedic viewpoint, Brihati is regarded as a potent *Shothahara* and *Vedanasthapana* drug that acts by correcting the fundamental disturbances responsible for inflammation rather than merely suppressing its outward

manifestations. In classical literature, inflammation (*Shotha*) is understood as a result of *Vata* and *Kapha* vitiation associated with impaired *Agni* and accumulation of *Ama*. *Brihati* is specifically indicated in such conditions because of its ability to pacify aggravated doshas while simultaneously improving metabolic functions.

The therapeutic activity of *Brihati* is best explained through its *Rasa Panchaka*. The predominance of *Tikta* and *Katu* rasa enables it to digest *Ama*, purify tissues, and reduce inflammatory toxins. Its *Laghu* and *Ruksha guna* counteract heaviness, moisture, and edema, which are hallmark features of *Kapha*-dominant inflammation. The *Tikshna guna* allows deeper penetration into tissues and channels, making *Brihati* effective even in chronic and deep-seated inflammatory conditions. *Ushna virya* plays a crucial role in relieving stiffness, improving circulation, and reducing pain caused by *Vata* obstruction, while *Katu vipaka* sustains digestive strength and prevents recurrence of inflammatory pathology.

Brihati exerts a significant influence on *Agni* at both digestive and tissue levels, thereby preventing the formation of new *Ama* and facilitating the resolution of existing inflammatory deposits. By promoting *Srotoshodhana*, it clears obstructed channels, improves tissue perfusion, and supports lymphatic drainage, which is essential for the reduction of swelling and congestion. This explains its classical indication in inflammatory disorders affecting the joints, respiratory system, and abdominal viscera.

Furthermore, *Brihati* acts at the level of multiple *Dhatus*, particularly *Rasa*, *Rakta*, and *Mamsa*, which are primarily involved in inflammatory processes. Its inclusion in *Dashamoola* formulations reflects its synergistic role in managing complex inflammatory conditions where pain, swelling, stiffness, and functional impairment coexist. Thus, in *Ayurveda*, *Brihati* is considered a *Samprapti-vighatana dravya*—a drug that interrupts the entire pathogenic cascade of inflammation and restores physiological balance in a holistic and sustained manner.

ROLE OF BRIHATI IN INFLAMMATORY CONDITIONS

1. General Inflammation (Shotha)

Brihati is traditionally indicated in both localized and systemic inflammation. Its *Ushna virya* enhances circulation and reduces stagnation, while its *Tikta* rasa helps in detoxification and tissue metabolism. It is commonly used in decoctions (*Kwatha*) and compound formulations to reduce swelling and pain.

2. Musculoskeletal and Joint Disorders

In conditions such as *Amavata* (rheumatoid-arthritis-like condition), *Sandhigata Vata* (osteoarthritis), and *Katishoola* (low back pain), *Brihati* helps reduce joint swelling, stiffness, and tenderness. As part of *Dashamoola*, it acts synergistically to pacify inflammation and restore joint mobility.

3. Respiratory Inflammatory Disorders

Brihati is highly valued in inflammatory respiratory conditions such as *Shwasa* (asthma) and *Kasa* (cough). Airway inflammation associated with bronchial hyper-reactivity is alleviated by its *Kapha*-reducing and bronchodilatory actions, thereby improving breathing comfort.

4. Visceral and Abdominal Inflammation

Classical references describe the use of *Brihati* in inflammatory conditions of the abdomen, including *Gulma* (abdominal masses) and *Udara roga* (abdominal disorders). Its *deepana-pachana* (digestive and metabolic enhancing) effect helps in resolving inflammation arising from metabolic toxins (*Ama*).

Modern Pharmacological Insights

Experimental studies have shown that *Solanum indicum* contains bioactive constituents such as steroidal alkaloids (e.g., solasodine), flavonoids, and saponins. These compounds exhibit:

- Inhibition of pro-inflammatory mediators
- Reduction in edema and tissue infiltration
- Antioxidant activity that limits oxidative stress-induced inflammation

Animal studies have demonstrated significant reduction in paw edema and inflammatory markers, supporting the traditional claims of *Brihati*'s anti-inflammatory potential.

DISCUSSION

Inflammation is a complex biological response involving vascular, cellular, and molecular events initiated to eliminate harmful stimuli and initiate tissue repair. However, persistent or dysregulated inflammation leads to tissue damage and chronic disease. The therapeutic relevance of Brihati (*Solanum indicum* Linn.) in inflammatory conditions becomes clearer when its actions are analyzed through both Ayurvedic principles and modern pharmacological understanding.

Ayurvedic Interpretation of Anti-Inflammatory Action

In Ayurveda, *Shotha* (inflammation) is not considered a single disease entity but a manifestation of disturbed *Doshas*, impaired *Agni*, and obstruction of *Srotas*. Brihati addresses inflammation at multiple levels:

- **Dosha Samprapti:**

Brihati primarily pacifies *Kapha* and *Vata*, the two doshas most commonly involved in inflammatory swelling, pain, stiffness, and heaviness. Its *Ushna virya* counteracts *Kapha*-induced stagnation, while its *Tikshna guna* helps relieve *Vata*-induced pain and rigidity.

- **Ama Pachana:**

Chronic inflammation in Ayurveda is often associated with *Ama* (metabolic toxins). The *Tikta* and *Katu rasa* of Brihati stimulate digestion and cellular metabolism, helping in the breakdown and elimination of *Ama*, thereby reducing the root cause of inflammation rather than merely suppressing symptoms.

- **Srotoshodhana:**

By clearing microchannels (*Srotas*), Brihati improves tissue perfusion and lymphatic drainage, which is crucial in resolving edema and chronic inflammatory swelling.

Thus, Brihati functions as a *Shothahara* drug not only by reducing swelling but also by correcting underlying metabolic and doshic disturbances.

Correlation with Modern Anti-Inflammatory Mechanisms

From a modern scientific perspective, inflammation involves mediators such as prostaglandins, cytokines (TNF- α , IL-1 β , IL-6), nitric oxide, and reactive oxygen

species. Studies on *Solanum indicum* suggest that its phytoconstituents act on multiple inflammatory pathways:

- **Inhibition of Inflammatory Mediators:**

Steroidal alkaloids like solasodine have been shown to suppress the synthesis and release of pro-inflammatory mediators, which parallels the Ayurvedic concept of reducing *Shotha* and *Vedana*.

- **Antioxidant Action:**

Oxidative stress plays a critical role in sustaining chronic inflammation. The flavonoids and phenolic compounds in Brihati neutralize free radicals, thereby preventing oxidative damage to tissues and interrupting the inflammation-oxidation cycle.

- **Membrane Stabilization:**

Experimental studies indicate that Brihati stabilizes lysosomal membranes, reducing the release of proteolytic enzymes that aggravate tissue inflammation. This explains its effectiveness in inflammatory joint and soft tissue disorders.

Unlike conventional NSAIDs, which primarily inhibit cyclooxygenase pathways and may cause gastric or renal side effects, Brihati demonstrates a broader modulatory effect with a comparatively safer profile when used in therapeutic doses.

Significance in Musculoskeletal Inflammatory Disorders

In diseases like *Amavata* and *Sandhigata Vata*, inflammation is compounded by immune dysregulation, toxin accumulation, and degenerative changes. Brihati's dual role as *Ama pachaka* and *Vata-Kapha shamaka* makes it particularly valuable. When used as part of *Dashamoola* formulations, it contributes to:

- Reduction in joint swelling and tenderness
- Improvement in range of motion
- Decrease in morning stiffness

This supports the classical Ayurvedic rationale of using Brihati in chronic inflammatory and degenerative conditions rather than as a short-term symptomatic drug.

Role in Respiratory Inflammation

Inflammatory respiratory conditions such as bronchial asthma involve mucosal edema, excess mucus secretion, and airway hyperresponsiveness.

Brihati's *Kapha-hara* and *Shwasahara* properties correlate with its experimentally observed bronchodilatory and anti-inflammatory actions. By reducing airway inflammation and mucus viscosity, Brihati improves airflow and reduces the frequency of exacerbations.

Synergistic Role in Polyherbal Formulations

Brihati is rarely used alone in classical practice; instead, it forms an integral part of compound formulations like *Dashamoola*. This highlights an important discussion point: Ayurveda emphasizes **synergism over single-drug action**. Brihati enhances the penetration and efficacy of companion herbs while maintaining balance and minimizing adverse effects. This multi-drug synergy aligns with current systems biology approaches in pharmacology.

CONCLUSION

Brihati (*Solanum indicum* Linn.) stands as a classical Ayurvedic herb with proven relevance in inflammatory and allied conditions. Its consistent mention in ancient texts, combined with emerging experimental evidence, validates its role as a safe and effective anti-inflammatory agent. Incorporation of Brihati into evidence-based integrative healthcare can provide sustainable therapeutic options for managing chronic inflammatory disorders. Further clinical studies are warranted to establish standardized dosing and expand its application in modern medicine.

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