

## AMRITA GHRITA: THE AYURVEDIC ELIXIR FOR INFLAMMATION AND RHEUMATOID ARTHRITIS

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### ABSTRACT

Rheumatoid arthritis (RA) is a chronic autoimmune condition marked by inflammation, pain, and joint damage. RA affects 0.5-1% of the adult population. RA occurs more commonly in females than in males with a 2-3:1 ratio. Conventional treatments like DMARDs and biologics address symptoms but often have limitations, prompting interest in complementary therapies. In Ayurveda, rheumatoid arthritis (RA) is closely correlated with a condition called "Amavata.". Early stages of Amavata can be effectively managed with Ayurvedic treatments. Amrita (Guduchi) Ghrita, a unique traditional Ayurvedic formulation indicated in aamvata in the form of therapeutic internal oleation. Amrita ghrita contain mainly *Amrita* (*Tinospora cordifolia*, also known as Guduchi), *shunthi* (*Zingiber officinale*) and ghrita (cows ghee).

They exhibits immunomodulatory, anti-inflammatory, and antioxidant properties. Its bioactive compounds mitigate oxidative stress and inhibit pro-inflammatory cytokines such as TNF- $\alpha$ , IL-1 $\beta$ , and IL-6, which are central to RA progression. This review explores the pharmacological properties and mechanisms of action of Ghrita in managing RA, with a focus on Amrita or Guduchi Ghrita as described in various classical Ayurvedic texts.

**KEYWORDS** -Amrita ghrita, Rheumatoid arthritis, Ayurveda.

### INTRODUCTION

Rheumatoid arthritis (RA) is a chronic inflammatory illness characterized by symmetric, peripheral polyarthritis. RA affects around 0.5-1% of the adult population worldwide.<sup>[1]</sup>

According to epidemiologic data, RA is more prevalent in women compared to men, with a lifetime risk of 3.6% in women compared to men.<sup>[2]</sup> It is the most frequent type of chronic inflammatory arthritis, causing joint destruction and disability. Numerous extra-articular symptoms, such as subcutaneous nodules, lung involvement, pericarditis, peripheral neuropathy, vasculitis, and hematologic abnormalities, can be caused by RA. Usually, inflammation of the joints, tendons, and bursae causes the initial symptoms of RA. Its pathology includes the activation of lymphocytes and CD4+ helper T cells, as well as the local release of chronic inflammatory mediators and cytokines such as tumour necrosis factor (TNF) and various cytokines such as interleukins (IL)<sup>[3]</sup> which results in synovial cell proliferation in joints, pannus formation, cartilage destruction, and bone erosion.<sup>[4]</sup>

Amrita Ghrita is an Ayurvedic formulation derived from *Tinospora cordifolia* (commonly known as Guduchi or Amrita), a medicinal plant revered for its immunomodulatory, anti-inflammatory, and antioxidant properties. The bioactive compounds in *Tinospora cordifolia*, such as alkaloids, glycosides, and steroids, have been shown to modulate the immune system, reduce oxidative stress, and inhibit the production of pro-inflammatory cytokines such as TNF- $\alpha$ , IL-1 $\beta$ , and IL-6. These cytokines play pivotal roles in the progression of RA by promoting synovial inflammation and joint destruction. By targeting these molecular pathways, Amrita Grit may offer symptomatic relief while potentially slowing disease progression.<sup>[5]</sup>

Clinical and preclinical studies on *Tinospora cordifolia* and its formulations provide a promising basis for the therapeutic role of Amrita Ghrita in RA.<sup>[6]</sup> Studies have demonstrated reduced joint swelling, improved mobility, and decreased levels of inflammatory markers in RA patients using formulations containing *Tinospora cordifolia*. Moreover, its antioxidant effects can mitigate oxidative damage to cartilage and other joint structures, addressing one of the underlying mechanisms of RA pathology. Unlike conventional drugs, which often come with adverse effects, Amrita Ghrita is generally well-tolerated, with minimal reported side effects, making it a viable adjunctive therapy for long-term management.

### **AIM AND OBJECTIVE**

Aim is highlight the potential of Amrita Ghrita as a complementary or alternative formulation for Rheumatoid Arthritis.

## Methods

The articles are screened using PubMed and Google Scholar. Google Scholar and PubMed were searched using an approach designed to enhance the retrieval of CTs, Case Series, and in vivo and in vitro reviews. The search terms included *Tinospora cardifolia*, and *Zingiber officinale*, as well as rheumatoid arthritis and anti-inflammatory effects.

## Anti-inflammatory Effects

*Tinospora cordifolia* has demonstrated the ability to inhibit pro-inflammatory cytokines like TNF- $\alpha$ , IL-1 $\beta$ , and IL-6. This action is pivotal in reducing joint inflammation and systemic effects in RA. *Terminalia cordifolia*, also known as *Tinospora cordifolia*, has anti-inflammatory and analgesic properties due to its bioactive components such as flavonoids, alkaloids, and diterpenoids. The plant decreases pro-inflammatory cytokines like TNF- $\alpha$ , IL-6, and IL-17 by inhibiting the NF- $\kappa$ B pathway. These cytokines play an important role in the inflammatory cascade, and inhibiting them can help reduce inflammation in illnesses such as arthritis.<sup>[6]</sup>

*T. Cordifolia* protects cartilage and bone from inflammatory damage in autoimmune disorders like rheumatoid arthritis by modulating bone remodeling mediators.<sup>[7]</sup>

Some animal studies have shown that *T.Cordifolia* Extract suppresses important pro-inflammatory cytokines and chemokines, as well as bone remodeling and matrix breakdown mediators.<sup>[8]</sup>

*Tinospora cordifolia* has demonstrated potential as an anti-osteoporotic agent by influencing key processes in bone formation. In vitro studies using osteoblast model systems have shown that it promotes cell proliferation, enhances differentiation into osteoblastic lineages, and supports the mineralization of bone-like matrix. Specifically, the alcoholic extract of *Tinospora cordifolia* has been found to stimulate osteoblast growth and facilitate both cellular maturation and matrix mineral deposition.<sup>[9]</sup> Ecdysteroids isolated from the plant have been reported of protein anabolic and anti-osteoporotic effects in mammals. Beta-Ecdysone (Ecd) from *Tinospora cordifolia* extracts have been reported to induce a significant increase in the thickness of joint cartilage, induce the osteogenic differentiation in mouse mesenchymal stem cells and to relieve osteoporosis in osteoporotic animal models. Further 20-OH- $\beta$ -Ecd isolated from *Tinospora cordifolia* has been reported of its anti-osteoporotic effects.<sup>[10]</sup>

*Zingiber officinale* (ginger) exhibits significant anti-inflammatory properties, mainly through its active components key inflammatory pathways, including cyclooxygenase (COX) and lipoxygenase (LOX), reducing prostaglandin and leukotriene synthesis. Ginger also suppresses the nuclear factor-kappa B (NF- $\kappa$ B) signaling pathway, lowering the production of pro-inflammatory cytokines like TNF- $\alpha$  and IL-6. Clinical and preclinical studies underscore its efficacy in treating inflammatory diseases such as osteoarthritis and rheumatoid arthritis by alleviating joint pain and improving mobility.

Research has further demonstrated ginger's antioxidant properties, which neutralize reactive oxygen species (ROS) and reduce oxidative stress, a critical factor in chronic inflammation. The combined anti-inflammatory and antioxidant effects make ginger a valuable adjunct in managing autoimmune and inflammatory conditions. Additionally, 6-shogaol, a prominent compound, has shown anti-inflammatory and anticancer potential, demonstrating reduced inflammatory markers in cellular and animal models (Raees et al., 2024). Moreover, its safety profile and availability enhance its appeal in integrative medicine.<sup>[11]</sup> However, challenges such as bioavailability and standardization of active ingredients necessitate further exploration to optimize therapeutic efficacy. Ginger's role in modulating inflammation-related pathways positions it as a promising natural alternative in managing inflammatory disorders and associated comorbidities. Ginger exhibits analgesic effects by influencing central and peripheral pain pathways, likely through its action on vanilloid receptors (TRPV1), which are involved in nociception. Additionally, ginger's antioxidant activity contributes to its efficacy by scavenging reactive oxygen species (ROS) that exacerbate inflammation and tissue damage. Preclinical and clinical studies have demonstrated its effectiveness in conditions like osteoarthritis, rheumatoid arthritis, and muscular pain, where it reduces pain severity and improves mobility. Ginger is used in traditional medicines since long back. It is specifically used in 'Amavat' where predominance of Ama in the pathology of arthritis is seen. Patient receiving 3-7 gm of powdered ginger daily for about 2 months shows significant reduction in pain and swelling associated with rheumatoid arthritis. Ginger has been shown to suppress the activation of nuclear factor-kappa B (NF- $\kappa$ B), a transcription factor that plays a key role in inflammatory responses.<sup>[12]</sup>

## DISCUSSION

Amrita Ghrita represents a holistic alternative to conventional RA treatments, emphasizing the importance of addressing underlying inflammation and immune dysfunction. Its

biocompatibility, minimal side effects, and affordability make it particularly suitable for long-term management. However, standardization of preparation, dosage optimization, and large-scale clinical trials are essential to establish its efficacy and safety.

Amrita Ghrita's therapeutic efficacy is attributed to the Lipophilic Delivery System, Ghee acts as a carrier, facilitating the absorption of fat-soluble active compounds into systemic circulation. Amrita Ghrita improves gut health, which plays a crucial role in regulating systemic inflammation. The combination of herbs in the formulation offers multi-targeted effects, addressing not only inflammation but also pain, stiffness, and systemic immune dysregulation. Preclinical studies on *Tinospora cordifolia* and ghee-based formulations have demonstrated significant reductions in paw edema, joint swelling, and inflammatory markers in arthritis models. Clinical trials have also reported improvements in Disease Activity Score-28 (DAS28), erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) levels in RA patients treated with Amrita Ghrita or similar formulations.<sup>[13]</sup>

Studies have indicated that *Tinospora cordifolia* modulates cytokine production, particularly by reducing pro-inflammatory mediators such as TNF- $\alpha$  and IL-6, which are elevated in RA pathogenesis. Furthermore, its antioxidant properties mitigate oxidative stress, a contributing factor in disease progression. The adaptogenic properties of Amrita Ghrita may also help reduce systemic fatigue and improve overall quality of life in RA patients. Traditional Ayurvedic texts advocate its use for balancing Vata and Kapha doshas, which are often implicated in RA pathology. Clinical evidence, though limited, suggests that when integrated with conventional therapies, Amrita Ghrita may enhance therapeutic outcomes by reducing disease activity scores, improving mobility, and minimizing the side effects of long-term pharmacological treatments.

In summary, Amrita Ghrita offers a multi-faceted approach to RA management, combining anti-inflammatory, immunomodulatory, and systemic benefits. However, more robust clinical trials are needed to validate its efficacy and safety as an adjunct to modern therapies. This integrative approach could bridge traditional wisdom and contemporary science, offering a holistic strategy for RA care.

## CONCLUSION

Amrita Ghrita offers a promising avenue for managing inflammation in RA, aligning with the Ayurvedic principle of personalized, holistic care. Its multifaceted actions from

immunomodulation to antioxidant defense align well with the complex pathophysiology of RA. By bridging the gap between traditional and modern medicine, Integrating such evidence-based traditional therapies into modern clinical practice could enhance patient outcomes and reduce the burden of chronic inflammatory diseases.

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