



THERAPEUTIC POTENTIAL OF NIRGUNDI IN ARTHRITIS MANAGEMENT: A COMPREHENSIVE REVIEW

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ABSTRACT

The versatile medicinal plant Nirgundi (*Vitex negundo*), exceptionally rich in phytochemicals, has been used widely in traditional medicine systems for the treatment of inflammatory diseases like arthritis. With reference to arthritis, the objective of this review is to provide a comprehensive overview of Nirgundi's pharmacological characteristics, modes of action, preclinical and clinical evidence, and safety profile. Its anti-inflammatory, analgesic, and immunomodulatory properties are attributed to key ingredients which include flavonoids, terpenoids, and alkaloids, making it an effective choice for the treatment of arthritis. Preclinical research has been proved that Nirgundi extracts and formulations work to reduce the symptoms of arthritis by a number of various processes, among which immune response modulation, oxidative stress suppression, and pro-inflammatory mediator inhibition. Nirgundi-based therapies is been shown favourable outcomes in clinical trials as well as minimal side effects.

KEYWORDS: Nirgundi, *Vitex negundo*, arthritis, inflammation, analgesia, phytochemistry, pharmacology, mechanisms of action, preclinical evidence, clinical evidence, safety.

INTRODUCTION

Across the world, arthritis seriously impacts people's quality of life causing joint inflammation, pain, and stiffness. The need for safe and efficient alternative remedies is highlighted by the fact that conventional treatments often come with drawbacks and limitations. The potential therapeutic properties of Nirgundi, a plant that is frequently employed in traditional systems of medicine, have drawn attention. The study offers a thorough preclinical and clinical evidence, and safety profile in the treatment of arthritis.

Botanical Profile

Nirgundi, or *Vitex negundo* as it is known scientifically, is a Verbenaceae family medicinal plant. It is widely

distributed over Southeast Asia and is indigenous to the Indian subcontinent. This perennial shrub is known by its characteristic five-foliolate leaves, which have led to the common name "Five-leaved Chaste Tree", which may generally reach a height of two to three meters.

During the warmer months, the plant produces clusters of tiny purple or blue blooms. When ripe, the small, spherical, black fruits have seeds inside. Nirgundi is a plant that can grow in a broad range of environments, such as damp forests, wastelands, and river banks. It is widely recognized for its resilience to harsh weather.



Pharmacological Properties

Nirgundi's diverse pharmacological actions have been attributed to its richness in bioactive components, including phenolic acids, terpenoids, alkaloids, and flavonoids. A variety of researches have provided insight into the anti-inflammatory, analgesic, antioxidant, and immunomodulatory characteristics of Nirgundi extracts and each of their components. In order to reduce inflammation, discomfort, and joint damage, Nirgundi works mechanically by inhibiting pro-inflammatory cytokines, enzymes, and mediators implicated in the etiology of arthritis.

Pre-Clinical Evidence

Preclinical research has demonstrated positive results while evaluating Nirgundi's efficacy in a range of animal models of arthritis, especially gouty arthritis, osteoarthritis, and rheumatoid arthritis. Joint inflammation, bone erosion, and cartilage degradation have all decreased after Nirgundi extracts or

formulations were administered. Pain levels and functional findings were also enhanced. These results emphasized its potential as an arthritic disease-modifying drug and were attributed to the drug's chondroprotective, antioxidant, and anti-inflammatory properties.

Clinical Evidence

Concerning those who have arthritis, clinical trials evaluating the safety as well as efficacy of Nirgundi-based therapies have shown positive results. With minimal side effects, Nirgundi formulations—such as topical ointments, oral supplements, and decoctions—have been proven to reduce the symptoms of arthritis, enhance joint function, and improve quality of life. To validate the therapeutic efficacy of Nirgundi in the management of arthritis, more carefully designed trials must be conducted due to the small number of studies and shortcomings in methodology, particularly demand for cautious consideration of the results.



Safety Profile

Traditional medical systems have long used Nirgundi as a result of its good safety record. At therapeutic doses, toxicological studies have shown its low toxicity and lack of notable side effects. However, any individual with underlying health problems, allergies, and expectant or nursing mothers should use extra caution. Additionally, there have been a few unusual reports of adverse effects, including gastrointestinal problems, allergic reactions, and skin-related issue that indicate the need of patient education and surveillance.

Traditional Use

Since ancient times, Nirgundi has been used in numerous traditional Indian medical systems, including Ayurveda, Siddha, and Unani. The medicinal properties of the Nirgundi plant, including its leaves, seeds, roots, and bark, have long been acknowledged by practitioners of

these systems. Ayurveda describes Nirgundi is strong, icky taste and being bitter. Its qualities are said to increase Pitta while soothing the Vata and Kapha doshas. It is Recognized for a wide range of therapeutic benefits, it possesses:

Anti-inflammatory: The traditional use of Nirgundi involves reducing swelling and inflammation brought on by a number of ailments, such as sprains, rheumatism, and arthritis. Coupled to bioactive ingredients including flavonoids and alkaloids, it has anti-inflammatory properties.

Analgesic: Nirgundi's analgesic qualities help relieve a variety of pains, including headaches, menstrual cramps, and musculoskeletal discomfort. It is thought that this impact comes from its capacity to lessen neuronal excitability and modify pain pathways.

Anti-arthritic: Nirgundi has long been used to treat joint problems and arthritis, making this one of its most well-known uses. Its anti-arthritic properties include decreased inflammatory responses in the joints, increased mobility, and improved joint function.

Antimicrobial: Nirgundi has the ability to fight off a variety of infections, such as fungi, bacteria, and parasites. It has long been used to treat microbial infections that cause gastrointestinal problems, wounds, and skin infections.

Antioxidant: Nirgundi's antioxidant qualities aid in defending tissues and cells from oxidative damage brought on by free radicals. This makes it beneficial for reducing illnesses linked to oxidative stress and for enhancing general health and longevity.

Nirgundi is used in traditional formulations made using a number of techniques, including decoction, oil extraction, and powdering. Inhalation, topical application, or oral administration of these formulations are possible depending on the desired therapeutic usage.

On average, the Indian subcontinent's traditional medical systems rely heavily on Nirgundi because of its adaptability and efficacy in treating a variety of health issues.

CONCLUSION

With its many therapeutic advantages and low adverse effects, Nirgundi is a promising botanical remedy for arthritis. It is a beneficial supplement or alternative therapy for the management of arthritis due to its anti-inflammatory, analgesic, antioxidant, and immunomodulatory qualities. Preclinical and clinical data substantiate its effectiveness in reducing the symptoms of arthritis and enhancing joint function; nevertheless, additional research is required for better understanding optimal dosage schedules, formulations, and long-term safety. All things considered, Nirgundi embodies integrative medicine and customized care, offering a natural and comprehensive approach to treat arthritis.

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