



PROCEEDINGS OF UZBEKISTAN-CHINA INTERNATIONAL SYMPOSIUM ON "CURRENT ISSUES IN THE CULTIVATION AND UTILIZATION OF MEDICINAL PLANTS"



Tashkent, June 18–19, 2026

<https://doi.org/10.5281/zenodo.21356314>

arthritis. Their effects are often linked to flavonoids, polyphenols, terpenoid and other phytochemicals that can modulate inflammatory pathways. Some plant extracts have demonstrated the inhibition of inflammatory mediators, reduction of oxidative stress and improvement in the clinical signs in experimental models.

Plants such as turmeric and ginger are among the most frequently studied because of their anti inflammatory activity. Other herbal preparations have also shown potential in reducing pain, swelling, and joint damage. Most of evidence still comes from preclinical studies or small scale clinical reports. Medicinal plants may have supportive value and they should not replace standard treatment without proper clinical evidence.

A major challenge is the lack of uniform standardization in herbal preparations. Differences in plant species, extraction methods, dose and quality control can affect results. This makes rigorous research essential before these agents can be confidently recommended in routine care.

Conclusion. Medicinal plants remain a promising source of compounds with potential benefit in rheumatoid arthritis. Their anti inflammatory and antioxidant properties make them attractive as adjuncts to conventional therapy. Clinical studies are needed to confirm efficacy, safety and appropriate dosing. Evidence based evaluation will be essential to translate these traditional remedies into reliable therapeutic options.

References

1. "Indian medicinal plants used for treatment of rheumatoid arthritis: a review," Research Journal of Pharmacy and Technology, 2015.
2. "Natural plant extracts for rheumatoid arthritis therapy," PMC, 2021.
3. "Medicinal plants with potential anti-arthritic activity," PMC, 2015.
4. "Phytotherapy as an adjunct to the treatment of rheumatoid arthritis," ScienceDirect, 2025.
5. "Traditional medicinal plants used for rheumatoid arthritis and related inflammatory disorders," ScienceDirect, 2024.

PHARMACOLOGICAL POTENTIAL OF NATURALLY DERIVED CHALCONES

Haroon Ahmad Khan¹ and Saimah Khan^{1*}

¹Department of Chemistry, Integral University, Lucknow-226026, India

E-mail: saimah@iul.ac.in and haroonahm@student.iul.ac.in

Abstract. Chalcones are naturally occurring polyphenolic compounds belonging to the flavonoid family and are widely distributed in fruits, vegetables, spices, and medicinal plants. Due to their simple chemical structure and diverse biological activities,

naturally derived chalcones have attracted significant attention in pharmaceutical and medicinal research. This review aims to summarize the pharmacological potential of naturally occurring chalcones and highlight their therapeutic applications. Extensive studies have demonstrated that chalcones exhibit a broad spectrum of biological activities, including antioxidant, anti-inflammatory, antimicrobial, antiviral, anticancer, antidiabetic, and neuroprotective effects. These activities are primarily attributed to their ability to modulate various cellular signaling pathways, inhibit enzyme activity, regulate oxidative stress, and influence inflammatory mediators. Furthermore, naturally derived chalcones have shown promising efficacy in preclinical studies against several chronic and infectious diseases, suggesting their potential as lead compounds for drug development. Recent advances in structural modification and molecular docking studies have further enhanced the understanding of their mechanism of action and pharmacological properties. Despite encouraging findings, challenges related to bioavailability, toxicity, and clinical validation remain to be addressed. Overall, naturally derived chalcones represent a valuable class of bioactive molecules with considerable therapeutic potential, warranting further investigation for the development of safe and effective pharmaceutical agents.

Keywords: Chalcones, Natural Products, Pharmacological Activities, Anticancer, Antioxidant, Anti-inflammatory, Drug Discovery, Medicinal Plants.

Introduction. Natural products have long served as a rich source of therapeutic agents and lead compounds for drug discovery. Among these bioactive molecules, chalcones represent an important class of naturally occurring flavonoids characterized by the presence of an α,β -unsaturated carbonyl system linking two aromatic rings. Chalcones are widely distributed in fruits, vegetables, spices, and medicinal plants, including licorice (*Glycyrrhiza glabra*), hops (*Humulus lupulus*), and various species of the *Angelica* and *Piper* genera.

In recent years, naturally derived chalcones have attracted significant scientific interest due to their broad spectrum of pharmacological activities. Numerous studies have demonstrated their antioxidant, anti-inflammatory, antimicrobial, antiviral, anticancer, antidiabetic, and neuroprotective properties. The biological activities of chalcones are largely attributed to their ability to interact with multiple molecular targets, modulate cellular signaling pathways, and regulate oxidative stress and inflammatory responses.

Given their structural diversity and therapeutic potential, chalcones have emerged as promising candidates for the development of novel pharmaceutical agents. This review aims to summarize the pharmacological activities, mechanisms of action, and future prospects of naturally derived chalcones in modern medicine.

Research Methodology. This review was conducted through a comprehensive literature survey of scientific publications related to naturally derived chalcones and their pharmacological activities. Relevant articles were collected from electronic databases including PubMed, Scopus, ScienceDirect, Google Scholar, and Web of Science. Keywords such as “natural chalcones,” “pharmacological activities of chalcones,”