Frontiers in Pharmaceutical, Material, and Environmental Sciences: Innovative Approaches and Applications

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1St Print Edition - 2026

Title: ***Frontiers in Pharmaceutical, Material, and Environmental Sciences: Innovative Approaches and Applications***

Editors: ***Tahmeena Khan, Qazi Inamur Rahman, Nafees Ahmad, Shahla Tanveer***

ISBN: 978-93-6884-630-7

MRP: 370/-INR

(Printed in India)

Chapter – 11

An Introduction to Chalcone Derivatives as Antimicrobial Agents

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Abstract

Chalcone derivatives, a prominent class of organic compounds belonging to the flavonoid family, have garnered significant attention for their diverse biological activities, particularly their antimicrobial potential. Structurally characterized by an α, β-unsaturated carbonyl system, chalcones exhibit remarkable versatility in modulating biological targets. These abstract highlights the exploration of chalcone derivatives as effective antimicrobial agents against bacterial and fungal pathogens. Chalcone derivatives are essential in various fields of natural disciplines. These are plant-derived polyphenolic compounds that display several biological activities and play significant roles in research and medicine. Chalcones have been reported to have many therapeutic activities, such as antimicrobial, anti-inflammatory, analgesic, cytotoxic, antitumor, antimalarial, etc. Therefore, many compounds with different medicinal properties have been developed recently based on the chalcone skeleton. Structural modifications, such as the incorporation of electron-donating or electron-withdrawing substituents, significantly enhance their potency and spectrum of activity. Moreover, the synergistic effects of chalcones when combined with conventional antibiotics underscore their potential in overcoming drug resistance.

Keywords: Chalcone derivatives, Antifungal, Antibacterial, Antimicrobial activity

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