

# A quiet but growing threat: Global perspectives on antifungal resistance and future therapeutic approaches

Swathi Gurajala, Meera Challapilla<sup>1</sup>

## Abstract:

Antifungal drug resistance is an escalating global health concern that threatens the effective treatment of fungal infections in both clinical and environmental settings. This review synthesizes developments, focusing on molecular and physiological mechanisms of resistance, key contributing factors, and associated therapeutic limitations. Through selected international case studies over the past 5 years (2020–2025), we illustrate the clinical and ecological consequences of resistant fungal pathogens and emphasize the need for coordinated global responses. We also discuss integrated strategies to mitigate this threat, including strengthened surveillance systems, optimized antifungal stewardship, and advancements in diagnostic tools and therapeutic innovation. By consolidating recent insights and identifying critical research gaps, this review aims to inform future investigations and guide policy frameworks to combat antifungal resistance worldwide.

## Keywords:

Antifungal agents, antifungal drug resistance, antifungal stewardship, case studies, clinical and environmental settings, fungal infections, global health, public health, resistance mechanisms, therapeutic challenges