



Review Article

Ciclopirox Olamine: A Comprehensive Pharmacological Review

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Ciclopirox olamine is a broad-spectrum antifungal agent used for treating fungal infections of skin, hair, and nails. It acts by chelating metal ions and inhibiting enzyme activity, disrupting fungal metabolism (1,2). It also exhibits antibacterial and anti-inflammatory properties. This review summarizes its mechanism, pharmacological profile, clinical applications, and emerging uses.

Keywords: Ciclopirox olamine, Antifungal agent, Mechanism of action, Dermatological infections.

INTRODUCTION

The increasing prevalence of fungal infections necessitates effective antifungal therapies (1). Ciclopirox olamine, a hydroxypyridone derivative, demonstrates broad-spectrum antifungal activity along with antibacterial and anti-inflammatory properties (2,3).

2. Chemical and Physicochemical Properties

2.1 Chemical Structure

Ciclopirox olamine is the ethanolamine salt of ciclopirox with molecular formula $C_{14}H_{24}N_2O_3$ (13). It exhibits tautomerism between keto and enol forms.

2.2 Physicochemical Properties

It is a white crystalline powder, freely soluble in water, and stable under normal conditions (16,17).

3. Pharmacological Profile

3.1 Mechanism of Action

Ciclopirox acts by chelating Fe^{3+} and Al^{3+} ions, inhibiting metal-dependent enzymes and disrupting fungal metabolism (4,14).

3.2 Pharmacological Activity

It shows activity against dermatophytes, yeasts, and molds (24). It also exhibits antibacterial and anti-inflammatory effects (26,27).

4. Clinical Applications

Ciclopirox is used in treating tinea infections, candidiasis, seborrheic dermatitis, and onychomycosis (5–7).

5. Formulations

It is available as creams, gels, shampoos, and nail lacquers for topical use (43,44).

6. Emerging Applications

Recent studies show potential anticancer, antiviral, and neuroprotective effects (52–56).

CONCLUSION

Ciclopirox olamine is a versatile antifungal agent with broad therapeutic potential and excellent safety profile.

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Cite: Vandana Patil, Aditi Dhondre*, Vishakha Sawant, Reshma Patil, Sachidanand Angadi, Ciclopirox Olamine: A Comprehensive Pharmacological Review, *Int. J. Med. Pharm. Sci.*, 2026, 2 (7), 290-291. <https://doi.org/10.5281/zenodo.21234441>