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**Terbinafine HCl nail solution with and without nail penetration enhancer: Evaluation of minimum inhibitory concentration and minimum fungicidal concentrations**

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Objective: There is a need for efficacious topical agents to treat onychomycosis. In this study, antifungal susceptibility of dermatophytes (*Trichophyton rubrum*, *T mentagrophytes*, *Epidermophyton floccosum*, and *Microsporium canis*), non-dermatophyte moulds (*Scytalidium* spp., *Scopulariopsis* spp.), and *Candida albicans* (25 isolates each) against 1% terbinafine HCl nail solution, with and without nail penetration enhancer dodecyl-2-N,N-dimethylaminoisopropionate hydrochloride (DDAIP HCl) was determined using the Clinical Laboratory Standards Institute (CLSI) minimum inhibitory concentration (MIC) methodology, and minimum fungicidal concentration (MFC) assay. Ciclopirox and miconazole were used as comparators.

Methods: The MICs of dermatophytes and moulds were determined using CLSI M38-A2 method, while that of yeast were evaluated according to CLSI M27-A2 document. MFCs were determined by subculturing all wells of the MIC showing no visible growth.

Results: Our data showed that addition of nail penetration enhancer to terbinafine lowered the MIC50 (minimum concentration inhibiting 50% of isolates) of dermatophytes by one dilution, but did not change the MIC range nor the MIC90 (minimum concentration inhibiting 90% of isolates). Terbinafine with/without nail penetration enhancer was fungicidal against dermatophytes (MFC range, 0.008-1.0 µg/ml for both). The MIC50 and MIC90 of terbinafine with enhancer were one dilution lower than those of terbinafine alone against *Scytalidium* strains. Additionally, terbinafine had fungistatic anti-*Candida* activity (MIC range, 0.007-0.12 µg/ml). Ciclopirox and miconazole were fungistatic against dermatophytes with MICs 2-4 folds lower than those for terbinafine.

Conclusion: MICs and MFCs of terbinafine with and without nail penetration enhancer against all fungal isolates tested were in agreement, indicating that combining this antifungal with the enhancer did not affect the susceptibility of the organisms to terbinafine and was not antagonistic.

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