Sporicidal effect of amorolfine and other antimycotics used in the therapy of fungal nail infections.

Abstract:
Although topical antifungal therapies for treating onychomycosis are available, the cure rate is unsatisfactorily low with a simultaneously high risk of recurrence. One reason might be the formation of dormant fungal cells by the pathogen, known as spores, which can survive in the affected nail keratin, thereby evading the effect of antifungal drugs. In this in vitro study, the ability of amorolfine and four other antimycotics (ciclopirox, bifonazole, terbinafine and fluconazole) to kill microconidia of the dermatophyte Trichophyton rubrum, chlamydospores of the dermatophyte Epidermophyton floccosum and blastospores of the yeast Candida albicans was extensively studied as these fungi occur predominantly in onychomycosis. The effectiveness of all five antimycotics depended on the drug concentration and the incubation time: a concentration of 10-1000 times the minimum inhibitory concentration against growing hyphae cells is needed to exert a sporicidal action. Amorolfine and ciclopirox showed the same sporicidal efficacy and kinetics for all three varieties of spores. Both were more effective than fluconazole and bifonazole against microconidia and chlamydospores as well as slightly more potent against chlamydospores and blastospores than terbinafine after 4 days of incubation and at concentrations of $\geq 10 \ \mu g \ \text{ml}^{-1}$. Finally, sporicidal activity on the tested strains was demonstrated for all five different...
antimycotics used for onychomycosis treatment.