

Abstract

Onychomycoses in community garden workers in Teresina-Piauí: causal agents and in vitro susceptibility to conventional antifungals and essential oils from plants in Northeast Brazil**Mitra Mobin; Márcia de Souza Carvalho Melhem (orientadora)**

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ABSTRACT

This cross-sectional study was to investigate in 125 horticulturists (Teresina- PI, Brazil) the etiology of onychomycosis and evaluate the susceptibility to antifungal traditional and essential oils (EO), chemically evaluated for composition and toxicity. Fungal species were identified by morphological, biochemical and molecular (ITS region and MALDI-TOF) analysis. The minimum inhibitory concentration (MIC) of fluconazole (FCZ), itraconazole (ITZ), terbinafine (TBF), amphotericin B (AMB), OE *Protium heptaphyllum* (OEPH) and *Aloysia lycioides* (OEAL) was determined by reference methods. Among the total assessed, 66 workers were infected with 69 agents being 76.8% (53/69) isolates of filamentous fungi, with most (98.1%; 52/53) nondermatophyte (FFND) fungi, and 23.2% of yeasts (16/69) encompassing *Candida* spp. (87.5, 14/16) and *Trichosporon asahii* (12.5%; 16/02). Among FFND, we found *Aspergillus clavato-nanicus* (23,2%), *Neoscytalidium hyalinum* (14,5%), *Acremonium hyalinulum* (8,7%), *N. dimidiatum* (7,4%), *Paecilomyces variotii* (4,3%), *Bipolaris* cf. *hawaiiensis*, *Curvularia lunata*, *Fusarium oxysporum* e *Rhinochadiella aquaspersa*, (2,9% each). We observed 98.1% of 52 isolates of FFND showing high FCZ MIC values (>16mg/L), compared to 53.8% for ITZ (MIC>0.5mg/L), to 34.6% for TBF (MIC>0.5mg/L) and 15.4% for AMB (MIC>2 mg/L). For 31.3% of yeasts we found high MICs against FCZ (>4 mg/L), compared to 6.3% for ITZ (MIC> 0.5 mg/L) and 50% for TBF (MIC>0.5mg/L). For OEPH, concentrations of 500 mg/L and 1000 mg/L inhibited, respectively: 57.1% (7/14) and 92.9% (13/14) of the yeast isolates. For 23 isolates of FFND evaluated, only 30.4% (7/23) were inhibited at 1000 mg/L of OEPH. For OEAL, 500 mg/L and 1000 mg/L inhibited, respectively, 21.4% (3/14) and 64.3% (9/14) of yeast isolates. For FFND, OEAL inhibited 26.1% (6/23) of FFND at 1000 mg/L concentration. OEPH showed higher inhibitory effectiveness for yeast and FFND but more toxic than OEAL. Both oils contain predominantly monoterpenes and produced no significant hemolytic effect, besides showing antifungal potential, requiring fractionation and identification of the active (s) substance(s) and *in vivo* evaluation of their effectiveness. This study indicated an unprecedented work, high frequency FFND as onychomycosis agents showing low sensitivity to AFGs. Future studies with horticulturists population that maintains intensive contact with soil, plant and water, *habitat* for this group of agents should be performed to confirm this trend that may have impact the therapy. Furthermore, this study is the pioneer in Teresina (PI) and highlights the importance of correct identification of its agents, due to the broad spectrum of species involved in onychomycosis and varied sensitivity to antifungal drugs.

KEYWORDS: Onychomycosis. Antifungal agents. Chemical Analysis. Susceptibility to Diseases.