

TITLE: Evaluation of the antifungal potential of pure culture extract of *Candida albicans* and *Candida parapsilosis* against *Trichophyton mentagrophytes*

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ABSTRACT: Onychomycoses are nail infections caused by fungal dermatophytes and yeasts. Irreversible damage to the nail plate and its attachments affect the quality of life of the patients constituting a serious public health problem. The physical chemical interactions present in mixed microbiota niches induce changes in the physiology of microorganisms, thereby affecting cellular viability. The mechanism of these interactions should be explored, and the *in vitro* screening of new antifungal molecules is essential for the success of new therapeutic approaches. The present study evaluated the *in vitro* antifungal potential of pure culture extract of *Candida albicans* and *C. parapsilosis* on the culture of *Trichophyton mentagrophytes* isolated from cases of onychomycosis. Yeast cultures were prepared in 500 mL Sabouraud Broth (DIFCO®) followed by millipore membrane filtration (0.2 µm). The nonpolar compounds were separated with ethyl acetate (100 mL) as a counter-phase and 10% dimethyl sulfoxide (DMSO). The minimal inhibitory concentration (MIC) of the extract was determined against *T. mentagrophytes*, following the recommendations of the 2008 Clinical and Laboratory Standards Institute (CLSI) M38-A2. The following formula was applied to calculate the percentage inhibition: $I = 1 - (\text{AbsT} - \text{AbsCT} / \text{AbsCC}) \times 100$ where: I = percentage inhibition; AbsT = absorbance of the inoculum extract; AbsE = absorbance of sterility control; AbsCC = absorbance of growth control. Tests performed in triplicate showed satisfactory results in the microbial control using the extracts (MIC of 1000 µg/mL) with 100% inhibition for *T. mentagrophytes*. The antifungal activity of the metabolic molecules of *C. albicans* and the *C. parapsilosis* complex is evident with therapeutic potential to control onychomycosis. In natural niches of mixed infection, the cellular viability of *T. mentagrophytes* can be altered, and, consequently, the diagnostic laboratory procedures compromised. Additional studies should be conducted with the purification and isolation of these compounds to investigate their synergistic action with conventional drugs used in the clinical practice.

Keywords: Extract culture, *Candida albicans*, *Candida parapsilosis*, *Trichophyton mentagrophytes*, antifungal activity