

TITLE: SYNERGISTIC ANTIFUNGAL EFFECT OF PURE CULTURE EXTRACT OF *CANDIDA PARAPSILOSIS* AND ITRACONAZOLE AGAINST RESISTANT *TRICHOPHYTON RUBRUM*

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ABSTRACT

Dermatophytosis is a disease of global significance caused by pathogenic keratinolytic fungi called dermatophytes, mainly *T. rubrum* and yeasts of genus *Candida*. Mixed infections of dermatophytes with yeasts are becoming more prevalent and contributing to the resistant nature of these infections. The present study aimed evaluate the synergistic interaction between a pure culture extract of *Candida parapsilosis* and itraconazole against resistant *Trichophyton rubrum*. This study used clinical strain of *C. parapsilosis* from the Laboratory of Microbiology of the Medical School in São José do Rio Preto (FAMERP), Brazil. A 500-mL inoculum prepared in Sabouraud Dextrose Broth was filtered through a 0.2 µm millipore membrane and separated using ethyl acetate as a counter-phase. The ethyl acetate phase was dried completely using a rotary evaporator and subsequently solubilized in sterile distilled water with 10% dimethyl sulfoxide (DMSO). Minimal Inhibitory Concentration (MIC) tests were performed for *T. rubrum* strains following the Clinical and Laboratory Standards Institute (CLSI) M38-A2 guidelines. After obtaining the MIC of the extract, a checkerboard trial with itraconazole was performed to evaluate the synergistic interaction with the extract based on the calculation of the fractional inhibitory concentration index (ICIF) = [(MIC itraconazole in the mix / MIC itraconazole alone) + (MIC extract in the mix / MIC extract isolated)]. The synergistic interaction was classified using the method described by Kumar et al., where values ≤ 0.5 indicate significant interactions. The results obtained for value MIC of *C. parapsilosis* extract against the *T. rubrum* and itraconazole in isolation were 2000 µg/mL and 0.5 µg/mL, respectively. However, when the extract was used in combination with Itraconazole, the MIC value was 62.5 µg/mL and of itraconazole it was 0.06 µg/mL with an ICIF value of 0.12. In conclusion, the extract of *C. parapsilosis* shows antifungal activity against *T. rubrum*, and its synergistic response with Itraconazole, presents potential therapeutic strategy for controlling of fungal infections.

Keywords: Dermatophytosis; Antifungal activity; *Candida parapsilosis*; *Trichophyton rubrum*; synergism.

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