

Title: ANTIFUNGAL ACTIVITY OF SYNTHETIC COMPOUNDS AGAINST MEDICALLY IMPORTANT FUNGI

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Abstract:

For years there has been a significant increase in the number of cases of mycosis worldwide. Several species of fungi are etiological agents of mycoses, especially the genus *Candida* and dermatophytes. Parallel to the increasing number of cases of these infections are the limited number of available drugs, their side effects, such as toxicity, and the increase of cases of antifungal resistance. These factors raise the search for alternative therapies that introduce new antifungal agents, such as synthetic compounds. In this context, the aims of this study were to evaluate the antimicrobial activity of 78 synthetic compounds against reference strains of *Candida albicans* (ATCC 14053) and *Trichophyton rubrum* (ATCC MYA 4438) by microdilution test, establishing their minimum inhibitory concentrations (MIC) and to evaluate their cytotoxicity in MRC-5 cell line by the MTT assay and the calculation of the cytotoxicity index (IC₅₀). Of all compounds tested, 31 exhibited some activity at different concentrations, including the M14 (derivative of acridone alkaloids) showed a MIC of 15.62 µg/mL against *C. albicans* and *T. rubrum*. Among derivatives of chalcones, compounds B3 and B4 exhibited MIC of 250 µg/mL against *C. albicans* and 31.25 µg/mL against *T. rubrum*, and B6 showed a MIC of 7.81 µg/mL against *T. rubrum*, but no activity against *C. albicans*. Cytotoxicity was determined for each compound and the IC₅₀ values for M14, B3, B4 and B6 were 142.70, 143.72, 164.70 and 152.35 µg/mL, respectively. Thus, IC₅₀ values of M14 and B6 in MRC-5 cells were considerably higher than their MIC values against fungi, which resulted in a selectivity index of 19.5 of B6 for *T. rubrum* and 9.09 of M14 for *C. albicans* and *T. rubrum*. In conclusion, the data set shows that M14 and B6 have the potential to be developed as new antifungal agents directed towards the treatment of human fungal infections, especially those caused by *T. rubrum* and *C. albicans*.

Keywords: antifungal activity, *Candida* spp., cytotoxicity, dermatophytes, synthetic compounds

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