

TITLE: SCORPION VENOM ANTIMICROBIAL PEPTIDES: ANTIFUNGAL ACTIVITY AND ITS EFFECT ON *Candida tropicalis* FILAMENTATION PROCESS

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ABSTRACT:

Among the non-albicans group, *Candida tropicalis* is the most frequently isolated species associated with candidemia and is considered as one of the main emerging agents responsible for candidiasis in Latin America. This may be due to its intrinsic ability to form hyphae, which is an important virulence factor directly linked to its pathogenesis, and its increasing resistance to fluconazole. In this context, the present work aims to determine the antifungal activity of three (ToAP1, ToAP2 e NDBP 5.7) antimicrobial peptides (AMPs) against *Candida tropicalis* as well as to their effect on hyphae formation. These peptides were chemically synthesized by Fmoc/t-butyl in solid support and the yeasts were cultured according to standard methodologies. First, the minimum inhibitory concentration (MIC) was determined for the different peptides against planktonic fungal cells employing the broth microdilution susceptibility test from Clinical and Laboratory Standards Institute (CLSI) M27-A3 guidelines. While, the effect of these AMPs on hypha formation was determined after 24 and 48 hours of interaction. Amphotericin B was used as a positive control in both essays, presented a MIC of 0,5 µg/mL. All peptides presented antifungal activity against *C. tropicalis*. The ToAP1 peptide had lowest antifungal activity amongst the three with a MIC of 15 µM, followed by NDBP-5.7 with 12,5 µM. ToAP2 was the most effective with MIC of 7,5 µM. In relation to their effect on hyphae formation, 12 µM of ToAP1 and 10 µM of NDBP-5.7 peptides seem to cause a delay in *C. tropicalis* filamentation time, when comparing the to the 24 and 48 hour interval. Conversely, Considering, no hyphae cells were observed upon the treatment with ToAP2. The results showed that the antimicrobial peptides used in this study may have antifungal effect against *Candida tropicalis*, as well as on the filamentation process. Due to the AMPs antimicrobial activity combined with the reported low frequency of resistance development, these AMPs may be considered, with more studies, a potential promise toward the development of new antifungals.

Keywords: antimicrobial peptides, *Candida tropicalis*, virulence factor

Development Agencies: CNPq, FAP-DF, Decanato de Pesquisa e Pós-graduação (DPG), UnB and Molecular Pathology Post-graduation program.