Evaluation of in vitro activity of *C. neoformans* isolated from hospital samples with synthetic peptides

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Cryptococcosis is an opportunistic infection caused by *Cryptococcus neoformans* that mainly affects HIV patients. Increased resistance and new strain emergence make necessary new antifungals, like short peptides. In this work, three short peptides (P1, P2, and P3) were synthesized by solid phase synthesis (SPPS) and tested as potential antifungal agents against clinical strains of the species *C. neoformans*.

Peptides were synthesized using Fmoc chemistry on Rink-Amide-methylbenzhydrylamine (MBHA) resin in SPPS. Petri dishes were prepared with Mueller Hinton medium and the inoculum of *C. neoformans* was seeded with each strain to be tested, making holes into which 15 µL of each peptide at different concentrations were inoculated. The plates were incubated for 48 hours at 28°C. The three peptides presented antifungal activity against the *C. neoformans* species, with inhibition zones observed in all studies for the highest peptide concentrations. P2 showed the greatest inhibition, with halos observed at the peptide concentration of 0.512 mg/mL, while P1 and P3 presented inhibition at a concentration of 2.5 mg/mL.

Peptides proved to be an interesting alternative in the search for new antifungals since they present advantages such as less development of resistance[1,2] compared to commercial antifungals.

[1]Zhai B, Lin X. Recent progress on antifungal drug development. Curr Pharm Biotechnol. 2011 Aug;12(8):1255-62. DOI: 10.2174/138920111796117292.

[2]Balatti, Galo E., Barletta, Patricio G., Perez, Andres D., Giudicessi, Silvana L., Martínez-Ceron, María C. Machine Learning Approaches to Improve Prediction of Target-Drug Interactions. En Drug Design Using Machine Learning (2022). Ed: Inamuddin, Tariq Altahli, Jorddy N. Cruz, Moamen Salah El-Deen Refat. Wiley, Hoboken, USA. https://doi.org/10.1002/9781394167258.ch2.