TITLE: ACTIVITY OF BIOGENIC SILVER NANOPARTICLES ON *Candida* spp. ORAL ISOLATES

AUTHORS: FONSECA, M.F.; SOKOLONSKI, A. R.; STANISIC, D.; TOMÉ, L.M.R.; GÓES-NETO, A.; AZEVEDO, V.; MEYER, R.; ARAÚJO, R.P.C.; TASIC, L.; PORTELA, RW.

INSTITUTIONS: INSTITUTO DE CIÊNCIAS DA SAÚDE, UNIVERSIDADE FEDERAL DA BAHIA (UFBA); INSTITUTO DE CIÊNCIAS BIOLÓGICAS, UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG); INSTITUTO DE QUÍMICA, UNIVERSIDADE ESTADUAL DE CAMPINAS (UNICAMP)

ABSTRACT: Oral candidiasis is an opportunistic infection caused by fungi belonging to *Candida* genus. This disease can develop in presence of predisposing conditions, such as immunodeficiencies, endocrine disorders, pregnancy, corticosteroids therapy and poor oral hygiene. Failures in the treatment and the incorrect use of antifungals are responsible for infection relapse and drug resistance, evidencing the urgency to develop new antifungal drugs. Considering this situation, our objective was to evaluate the activity of biogenic silver nanoparticles, synthetized using *Fusarium oxysporum* molecules, on *Candida* sp. isolated from patients with prothetic stomatitis. The resistance/susceptibility profile of *Candida* spp. oral isolates to commercial drugs (fluconazole, ketoconazole, amphotericin B and nystatin) and to biogenic silver nanoparticles (AgNPs) was evaluated using the microdilution in broth assay, where the minimum inhibitory concentration (MIC) and the minimum fungicidal concentration (MFC) were defined. AgNP-treated and non-treated *Candida* spp. isolates were evaluated using scanning electron microscopy (SEM). 20 isolates were obtained, being that *Candida albicans* was the most prevalent species isolated. Our results showed high variability in the fluconazole susceptibility. Many non-*Candida albicans* (NCA) isolates showed resistance to fluconazole, but were susceptible to AgNPs. All evaluated isolates were susceptible to the AgNPs in concentrations lower than 16 µg/mL. Different from fluconazole, that presented no fungicide activity for half of the isolates, the AgNPs presented determined fungicide concentrations for all of them. AgNPs caused surface damage and cell disruption in *Candida* spp. The results herein presented showed a marked antifungal activity by the AgNPs. In this

way, the biogenic AgNPs synthetized using *F. oxysporum* present a great potential in oral candidiasis therapeutics.

Keywords: *Candida albicans*, fungicide drugs, nanotechnology, oral candidiasis.

Development Agency: Fundação de Amparo à Pesquisa e Extensão (FAPEX)