29th ECCMID Amsterdam, Netherlands 13 – 16 April 2019

The congress of ESCMID

P2152 *In vitro* assay of silver nanoparticles efficiency in comparison with conventional antifungals against planktonic and biofilm-forming *Candida albicans* isolates from hospitalised patients

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Background: The increasing number of fungal infections and treatment failures in patients receiving long-term antifungal therapy highlights an acute need to develop new efficient alternative therapeutic strategies for fighting resistant and biofilm-forming *Candida albicans* strains. The aim of this study was to evaluate the antifungal efficacy of silver nanoparticles (AgNPs) in comparison with azoles against planktonic and adherent *C. albicans* clinical strains isolated from hospitalized patients.

Materials/methods: The AgNPs with spherical shape and an average diameter of 1 nm were synthesized by microwave-assisted techniques and suspended in dimethyl sulfoxide (DMSO) at a stock concentration of 5mg/mL. In order to assess the antifungal activity of AgNPs in comparison with azoles, a number of 20 *C. albicans* strains isolated from hospitalized patients were streaked on Sabouraud's dextrose agar (Oxoid) for 24h. The qualitative screening of conventional antifungals, i.e. fluconazole (FCA), itraconazole (ITR) and voriconazole (VRC) and AgNPs antifungal activity was performed by an adapted disk diffusion method. The quantitative assay of the antifungal activity against planktonic and adherent strains was performed by the 96-well plate microdilution assay to establish the minimal inhibitory concentration (MICs) and by the crystal violet microtiter assay to determine the minimum biofilm eradication concentration (MBEC).

Results: ThetestedAgNPs exhibited a more intensive antifungal activity as compared to the conventional antifungals, as revealed by the very low MIC and MBEC values. The AgNPs exhibited MIC values ranging from 0.625 to1.25 mg/mL, which were generally lower than those obtained for FCA (from 1.25 to 2.5 mg /mL), ITR (from 1.25 to 5.0 mg /mL) and VRC (from 0.5 to 5.0 mg /mL). Concerning the anti-biofilm efficiency of AgNPs, their MBEC ranged from 0.625 to 5 mg /mL, while for azoles they were of 1.25, 0.625 and 2.5 mg/mL for FCA, ITR and VRC respectively, for all strains.

Conclusions: Our results demonstrated a superior efficacy ofAgNPs as compared with azoles against planktonic *C. albicans*clinical isolates, and comparative activity with ITR against adherent fungal cells. These activities could be due to the shape and low size of the obtained nanoparticles, revealing their potential to be exploited for the development of efficient antifungal strategies.