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EFFECT OF PRETREATMENT OF CANDIDA BIOFILM CELLS WITH SILVER NANOPARTICLES ON THE ADHESION CAPACITY TO HUMAN EPITHELIAL CELLS AND POLYSTYRENE SURFACE

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Effect of pretreatment of *Candida* biofilm cells with silver nanoparticles on the adhesion capacity to human epithelial cells and polystyrene surface

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Objectives: The pathogenicity of *Candida* spp. has been recognized by some factors, including adhesion to host cells or inert surfaces and biofilm formation. In addition, the dispersal of biofilm cells may act as a continuous source of infection. Thus, the aim of this study was to evaluate the adhesion capacity of *Candida albicans* and *Candida glabrata* cells recovered from *Candida* biofilms treated with silver nanoparticles (SN) to human epithelial cells and polystyrene surface.
Methods: Candida biofilms (48 h) were formed in 6-well polystyrene microtiter plates and treated during 24 h with SN (diameter of 5 nm) at concentrations of 13.5 and 54 μg/mL. Controls devoid of SN were included in this study. After the treatment period, biofilms were scraped from the wells and resuspended in phosphate buffered saline. These *Candida* cell suspensions (10^7 viable cells/mL in RPMI medium) were added to HeLa cells monolayers or to empty wells of a 24-well microtiter plate (to study adhesion to polysterene). After 2 h of contact, the adhesion capacity of the yeasts to HeLa cells and polystyrene surfaces was determined using crystal violet staining.
Results: Compared to the controls, the adhesion of *Candida* biofilm cells (pretreated with SN) to HeLa cells and polystyrene surfaces was significantly reduced. This reduction was higher when biofilm cells were pretreated with

SN in a concentration of 54 µg/mL. *Conclusion:* These findings allow to conclude that SN may induce changes in viable yeasts, since they decrease their adhesion capacity, which can, consequently, cause lower dissemination of *Candida* infections.

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