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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 (10⁷ 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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