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1540 Antifungal Activity of Different Silver Nanoparticles Suspensions Against *Candida* Biofilms

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Location: Poster Hall (Convention Center)

Presentation Type: Poster Session

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Objective: The tolerance of *Candida* biofilms to conventional antifungal drugs has stimulated the search for new therapies that could prevent or treat *Candida*-associated denture stomatitis. The objectives of this study were (i) to assess the antibiofilm activity of different silver nanoparticles (SN) suspensions against *Candida albicans* and *Candida glabrata* biofilms and (ii) to evaluate the effect of these nanoparticles on the matrix composition and the structure of *Candida* biofilms.

Method: SN of three different average sizes (5, 10 and 60 nm) were used in this study. Biofilms of an oral clinical isolate of *C. albicans* and *C. glabrata* were formed for 48 h. These biofilms were exposed to different concentrations of SN for a period of 24 h. Antibiofilm activity of SN was determined by total biomass quantification (using crystal violet staining) and colony forming units enumeration. The extracellular matrices of *Candida* biofilms were extracted and analyzed chemically in terms of proteins, carbohydrates and DNA. Scanning electron microscopy (SEM) and epifluorescence microscopy were used to analyze the structure and morphology of the biofilms.

Result: SN were effective in reducing total biomass (around 90%) of *C. glabrata* biofilms. All SN suspensions showed significant reduction of the number of cultivable cells at concentrations equal to or higher than 108 µg/mL. The particle size and the type of stabilizing agent did not interfere in the antibiofilm activity of SN. Interestingly, SN induce modifications in the contents of protein, carbohydrate and DNA of the extracellular matrices of *Candida* biofilms. SEM and epifluorescence investigations revealed structural differences in spatial arrangement and damage in the cell walls of biofilm cells, compared to the controls.

Conclusion: SN present therapeutic potential and might be useful in the treatment of denture stomatitis.

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Keywords: Antimicrobials, Biofilm and Fungi

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