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P0332 In vitro assay of gold nano-particles anti-fungal activity against planktonic and adherent Candida albicans strains

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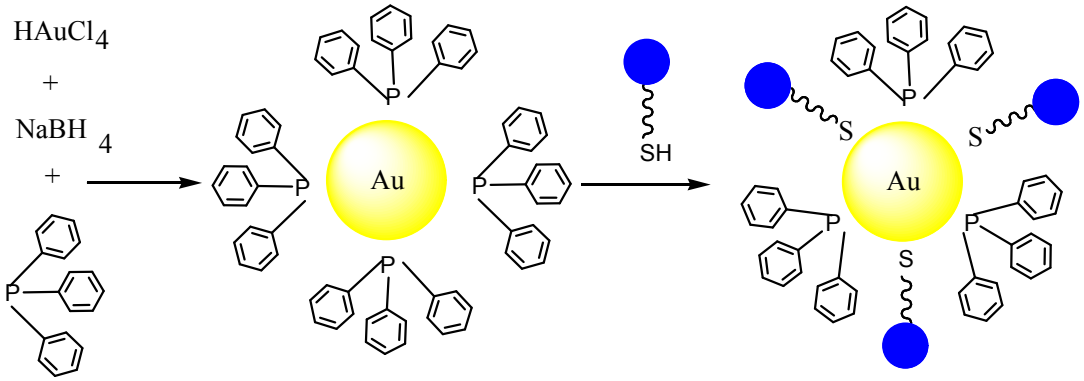
Background: The incidence of fungal infections, as well as of antifungal resistance rate is continuously increasing in the last decades, with an important contribution to morbidity and mortality. *Candida albicans* is the first in the top of human fungal pathogens that cause both superficial and deep tissue infections, often associated with biofilm growth, which contributes to the high level of antimicrobial resistance and to the chronicization of these infections. Furthermore, the development of other therapeutic alternatives is urgently required. This study evaluates the antifungal activity of novel gold Nano-particles (AuNPs) on planktonic and biofilm embedded *Candida albicans* clinical strains.

Materials/methods: Triphenylphosphine gold nanoparticles were functionalized with various thiol compounds of interest (2(S)-1-[2(S)-methyl-3-tionyl-propanoyl]pyrolidine-acide or captoprile; ditiopropanoic-acide; mercaptosuccinic-acide; 2-mercapto-benzo[d]-1,3-tiazole and 2-mercapto-benzimidazole) (Fig.1). The interaction of AuNPs (binary concentrations range from 0.078 to 5 mg/mL) with fungal cells has been evaluated by using the minimal inhibitory concentration (MIC) and minimal biofilm eradication concentration (MBEC)



assays

Results: A number of 19 *C. albicans* clinical strains have been tested. The AuNPs exhibited an antifungal activity proportional to the tested concentration. The MIC values ranged from 0.625 to 1.25 mg/mL, while the MBEC ones from 0.312 to 0.625 mg/mL. Taking into account the average values, the obtained results indicate a higher anti-biofilm efficiency of the tested NPs, as revealed by the average MBEC of 0.312 mg/ mL as compared to the activity against planktonic cells (the average MIC value being 0.624 mg/mL).

Conclusions: The result of this study revealed that AuNPs show a promising potential for the development of novel anti-biofilm strategies that could be used to eradicate and prevent the chronicization of fungal infections in risk patients.