TITLE: THIOSEMICARBAZIDE, THIOSEMICARBAZIDE IN NANOPARTICLE OF CHITOSAN AND THIOSEMICARBAZIDE DERIVED FROM CAMPHENE AS ANTIFUNGAL OVER *CANDIDA ALBICANS*

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ABSTRACT

Responsible by various opportunistic infections, *Candida albicans* is pathogenic yeast in human. Vulvovagin candidiasis affects millions of women every year; 25% of them present asymptomatic colonization, from those, 75% develop infection processes during her life. Usually, treatment is performed by using three groups of composts, such as azoles, polyenes and echinocandins. However, oftentimes the treatment does not provide effective cure and still there are cases of resistance and high toxicity. The thiosemicarbazides (TSC) were already described as antifungal composts, microbacterial, antitumor among others. They are between composts that have the required criteria for are good drug. In this way, many TSC derivatives has been synthesized to evaluate activity biological be evaluated. Thus, our goal was evaluating the antifungal potential in vitro and in vivo of thiosemicarbazide (TSC), thiosemicarbazide in Nanoparticle of chitosan and thiosemicarbazide derived from camphene (TSC-C) in *C. albicans*. The *C. albicans* ATCC28367 isolated was cultivated at yeast form in Sabouraud dextrose agar medium in 37ºC. The TSC was acquired from Sigma-Aldrich and TSC-C and nanoTSC were synthesized in our laboratories. Assay for determination of minimum inhibitory concentration (MIC), minimum fungicidal concentration (MFC), cytotoxicity and selectivity index were performed. To in vivo assays were used females' mice. The treatment was performed for seven days after infection. To analyze the treatment effect, the mice were sacrificed and extracted vaginal tissues were macerated and cultivated in petri plates containing Sabouraud dextrose agar. Histopathological exam was performed to vaginal tissues. CIM results showed that all composts were efficient inhibiting fungus growth in concentration of 1.37 mM, 0.02 mM and 0.27 mM to TSC, TSC-C and nanoTSC, respectively. CFM to TSC-C and nanoTSC were 500 µg/mL and 50µg/mL, respectively; it nor found to TSC since the concentration maximum tested 500 µg/mL was not fungicide. All composts were not cytotoxic and had good selectivity index. In the in vivo assays, the mice were separated in six groups, positive control, negative control,

empty nanoparticle control, TSC, TSC-C and nanoTSC. The best results were to NanoTSC treating.

KEYWORDS: *Candida albicans*, Candidiasis, thiosemicarbazide, thiosemicarbazide camphene and nanoparticle

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