

Title: METANOLIC EXTRACT OF *Syngonanthus nitens* (Bong.) Ruhland LOADED OR NOT IN A NANOSTRUCTURED SYSTEM AGAINST *Candida albicans*: AN *in vitro* PROSPECTING OF THE ANTIFUNGAL POTENTIAL

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Abstract:

Nanostructured systems of drug delivery (NSDD) have great advantages in the pharmaceutical field, one of them is the possibility of improving the pharmacological activity of plant extracts to apply them in the treatment of fungal diseases. *C. albicans* is the main yeast present in infectious cases affecting humans, and today many strains are resistant to the drugs used in clinical practice. *S. nitens*, has been presented in the literature as promising in antifungal activity, which shows interesting for incorporation in a NSDD aiming a new therapeutic arsenal in infections caused by *C. albicans*. This study aimed to evaluate the *in vitro* antifungal potential of the methanolic extract of scapes of *S. nitens* loaded (SNEL) or not (SNE) in a liquid crystal precursor system (LCPS) [Constituted in oleic acid (40%) as oil phase, PEG-5-Ceteth-20 (40%) as surfactant and a polymer dispersion of Carbophol™ + Polycarbophyl 974P™ (20%) as aqueous phase] against standard and clinical strains of *C. albicans* fluconazole resistant. For determination of minimal inhibitory concentration (MIC) was used the dilution in microplates technique which the SNE and SNEL were evaluated in the concentrations of 1000 to 7.8 µg/mL. The MIC results selected (in addition to the standard strain), the clinical strain that was more sensitive to evaluate the inhibitory behavior in 48 hours (*Time kill* assay). In brief, RPMI 1640 medium containing 2.5×10^3 cell/mL of yeasts and 2 x MIC of SNE and SNEL was incubated and aliquots of 0.5 mL were removed at different time intervals (0, 30 min, and 1, 2, 4, 8, 12, 24, 36, 48 hours), and resuspended in Sabouraud dextrose broth medium and were inoculated on Sabouraud dextrose agar plates. All plates were incubated at 37°C for 48 h for counting the colonies. Amphotericin B was used as control. The results showed that SNE has effective antifungal activity with MIC values that varied from 250 to 125 µg/mL, and SNEL was more effective with MIC that varied of 31,2 to 62,5 µg/mL. The same pattern was observed in the time kill assay where SNEL was more effective than the SNE in the inhibition of yeast growth during the period of 48 hours. These results demonstrate the effectiveness of SNE against *C. albicans* and showed that the incorporation into LCPS can be an alternative in the treatment of candidiasis.

Keywords: *Candida albicans*; *Syngonanthus nitens*; Nanostructured system for drug delivery, antifungal activity.

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