TITLE: ANTIFUNGAL ACTIVITY OF ESSENTIAL OILS AGAINST *Candida albicans*

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ABSTRACT:
Essential oils are complex mixtures of volatile substances usually extracted from aromatic plants, which have antimicrobial activity, and may be alternative to activity against species resistant to antibiotics and antifungals. The aim was to determine the antifungal activity of essential oils against *Candida albicans* through of the determination of Minimum Inhibitory Concentration (MIC) and Minimum Fungicidal Concentration (MFC). Three different yeast strains, ATCC 26790 (in triplicate), ATCC 24433 (in triplicate) and ATCC 90029 (in duplicate) were used. The commercial essential oils (BySamia) of rosemary (*Rosmarinus officinalis* L.), lemon grass (*Cymbopogon schoenanthus* L.), clove (*Eugenia caryophyllata* T.) extracted from leaves, orange (*Citrus aurantium* L.), lemon Tahiti (*Citrus latifolia* T.) and thyme (*Thymus vulgaris* L.) were tested at serial concentrations between 16,384 and 32 $\mu g.mL^{-1}$ in Muller Hinton Broth with 2% glucose and 0,5% Tween80. The tests were also performed with a control drug, itraconazole at serial concentrations of 256 to 0.5 $\mu g.mL^{-1}$. The 96-well plate microdilution was performed for each essential oil and itraconazole, and the double concentrations were prepared in broth. From the highest concentration the remaining concentrations were prepared on the plate itself by serial dilution, with 50 µL of each concentration remaining in each well. The inoculum was prepared for each strain from activated culture in TSB and incubated for 24 hours at 35°C. The cell density was standardized in a spectrophotometer on the 0.5 MacFarland scale, followed by a 1:10 dilution in saline and a 1:20 dilution in the broth used, the cellular concentration being approximately $2.5x10^3$ $CFU.mL^{-1}$ after addition in the wells. The microplates were incubated at 35°C for 24 hours and then 50 µL of 0.1% resazurin indicator was added to each well for reading. Before reading the microplates, each well was replicated BDA plates and the plates incubated at 35ºC for 24 hours. For all the oils at the concentrations tested there was no inhibition for the three *Candida albicans* strains, therefore, there was no fungicidal activity (MIC and MFC >16,384 µg.mL-1). The itraconazole control drug had MIC and MFC of 4 $\mu g.mL^{-1}$ for the ATCC 26790 and ATCC 24433 strains. The ATCC 90029 was not inhibited at the highest tested concentration of itraconazole, with MIC and MFC considered >256 $\mu g.mL^{-1}$.

Key-words: essential oils, antifungal activity, *Candida albicans*.