

Title: ANTIFUNGAL EFFECT *IN VITRO* OF VEGETALS EXTRACTS AGAINST *Candida albicans* PLANKTONIC CELLS AND BIOFILM

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Abstract:

Because of the increasing resistance of microorganisms to antimicrobial agents, studies of alternative methods, like the use of medicinal plants, are very relevant. The aim of this study was to evaluate the antifungal activity of glycolic extracts of *Rosmarinus officinalis* (rosemary), *Betula pendula* (silver birch), *Hamamelis virginiana* (witch hazel), *Schinus terebinthifolius* (Brazilian pepper tree) and *Persea americana* (avocado) on planktonic and biofilm growth of *C. albicans*. Initially, antifungal activity of the vegetals glycolic extract were evaluated by microdilution method based on Clinical and Laboratory Standards Institute in order to obtain the minimum inhibitory concentration (MIC) and minimum fungicidal concentration (MFC). Biofilms were formed in microtiter plates with suspensions of 10^7 cells/mL and incubation at 37°C under stirring for 48 hours. Then the biofilms were treated with the extracts for 5 minutes with different concentrations for each extract. Saline was used as control. Biofilms were disaggregated and the decimal dilutions were plated on Sabouraud Dextrose agar, and incubated at 37 °C for 48 hours. Next, the counting of colony forming units (CFU/mL) was performed. Data obtained were statistically analyzed by ANOVA and Tukey test ($p \leq 0.05$). The results indicated that extracts showed MIC of 0.78 mg / mL (rosemary), 1.56 mg / mL (Brazilian pepper tree, silver birch and witch hazel) and 6.25 mg / mL (avocado) and MFC of 3.13 mg / mL (rosemary, Brazilian pepper tree and silver birch), 6.25 mg / mL (witch hazel) and 12.5 mg / mL (avocado). The significant reduction of CFU ($p < 0.05$) of the biofilm was in concentrations of 25 mg / mL (silver birch), 50 mg / mL (avocado and Brazilian pepper tree) and 200 mg / mL (rosemary and witch hazel), with a percentage of reduction of 99.99% after exposure to witch hazel extract, 99.6% to rosemary, 97.7% to Brazilian pepper tree, 87% to silver birch and 74% to avocado. In addition, *C. albicans* growth was not affected by the propylene glycol. Therefore, it was concluded that the glycolic extracts of rosemary, silver birch, witch hazel, Brazilian pepper tree, and avocado showed antifungal activity on *C. albicans*, both in planktonic and biofilm growth.

Keywords: Antifungal activity; Plant extracts; *Candida albicans*