

Evolution of Developing an Alternative Treatment for *Candida albicans* using Natural Plant Extracts

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An alternative treatment using natural plant extracts was investigated for the opportunistic fungal pathogen, *Candida albicans*. Infections with this pathogen are frequently seen in immunocompromised and immunocompetent patients such as infants, diabetics, chemotherapy, post-transplant, and HIV/AIDS patients. Plant extracts of cinnamon, coconut, garlic, ginger, lemon, lime, neem, olive leaf, oregano, peppermint and pomegranate were tested individually, in combinations, and in varied ratios. Cultures of *C. albicans* were suspended in sterile water and spread onto media plates, after which paper discs loaded with extract/extract combinations were placed onto the surface. Plates were incubated at 37°C. Using the disc diffusion method, diameters of zones of inhibition (ZOIs) were measured and recorded at 24-hour intervals. Based on the ZOIs, cinnamon extract—alone and especially in certain combinations—was effective at inhibiting *C. albicans*. Synergistic effects were pronounced in certain 2-extract and 3-extract combinations and studied further. Cinnamon:Garlic:Coconut (8:1:1) and Cinnamon:Ginger:Coconut (8:1:1) exhibited the largest ZOIs which were even larger than the prescription medications tested, Fluconazole and Nystatin. Hence, it can be stated that these combinations may be an effective treatment for *C. albicans* infections. These results, combined with a review of the scientific literature, strongly suggest that the alternative treatment using natural plant extracts can have a better safety profile with minimal side-effects when compared to standardized pharmaceutical medications. Further analytical studies will confirm these results and potentially lead a path to pharmacological advancement resulting in an effective and safer alternative for treating *C. albicans*.

Awards Won:

Fourth Award of \$500