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 37ºC. 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